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Suggested Citation

National Science Foundation, Profiles--Chemical Engineering: Human Resources and Funding (NSF 89-312) (Washington, D.C., 1989).

foreword

This Profiles report is one in a new series of publications developed by the Division of Science Resources Studies (SRS) to focus attention on particular fields of science and engineering. The Profiles series is designed to better serve our various user communities by providing current and historical information on personnel, education, and funding for a specific field in one volume.

This report series is designed to complement other SRS publications which generally focus either on a particular aspect of science and technology, such as Federal funding, or on a particular sector, such as industry.

These reports feature information from regularly recurring SRS surveys. We plan to update the Profiles series periodically. We welcome any comments or suggestions on the Profiles series.

William L. Stewart
Director, Division of
Science Resources Studies
Directorate for Scientific,
Technological, and
International Affairs

April, 1989

acknowledgments

This report was developed within the Division of Science Resources Studies, Surveys and Analysis Section, by Joseph P. Gannon, Economist, Industry Studies Group (ISG), under the direction of Thomas J. Hogan, Study Director, ISG. Guidance and supervision were provided by Charles H. Dickens, Head, Surveys and Analysis Section, and William L. Stewart, Director, Division of Science Resources Studies. Data used in the report were supplied by many groups within the Division.

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i. overview

Chemical engineers made up 6 percent (149,000) of the Nation's engineering workforce in 1986. Their numbers grew 6.8 percent yearly between 1976 and 1986, 1 percentage point more than did total engineers. Although most engineering fields grew at a steady rate over this period, much of the growth in chemical engineering occurred before 1984. In fact, between 1984 and 1986, the growth rate for employed chemical engineers dropped to 3 percent per year, while total engineering employment grew 5 percent annually.

As several measures indicate, demand for chemical engineers was relatively weak compared to total engineers in the mid-eighties. The unemployment rate for chemical engineers in 1984 was 2.4 percent; in 1986 it was 2.6 percent. For engineers overall, the unemployment rate in both years was 1.2 percent. Average salary, an indirect measure of demand, also showed a relative decline for chemical engineers. Between 1984 and 1986, the average salary increase of 1.4 percent for chemical engineers was the lowest for all engineering fields except mining and aeronautical engineering. The salaries in these fields increased about 1 percent in each case.

Recent starting salary data from the College Placement Council suggest a possible turnaround in demand for bachelor's graduates in chemical engineering. Further confirmation of this change in demand occurred at an early 1989 meeting of the Council for Chemical Research, which noted that demand for new chemical engineers currently exceeds supply. Much of the demand is in the materials area—plastics and polymers. For example, computer chip manufacturing is now largely a series of chemical and materials processes at the microscale. Chemical engineering is uniquely qualified to provide the underlying process technology needed here to keep the United States competitive. Also, there is growing use of chemical engineering expertise in emerging multidisciplinary efforts, such as biotechnology, and in "nontraditional" industries, such as aerospace and microelectronics.1/ Furthermore, chemicals are among the most successful U.S. industries competing in the global market-place.

Despite lessened demand for chemical engineers in the mid-eighties, women continued to increase their percentage of total chemical engineering employment. Women accounted for 3 percent of chemical engineers in 1976, and 8 percent by 1986. Among all engineers, women represented only 4 percent of total engineers in 1986, despite the fact that total engineers grew more over the trend period than did chemical engineers.

From 1976 through 1984, chemical engineers' employment in industry grew nearly 8 percent yearly, but only 1 percent yearly between 1984

1/ Useful discussions of current and emerging developments in chemical engineering as a field of study and work will be found in American Chemical Society, Trends Affecting the Chemical Community (Washington, D.C., February 1988) and National Research Council, Frontiers in Chemical Engineering (Washington, D.C., 1988).

and 1986. To some extent, educational institutions and the Federal Government offset the minimal growth in industry between 1984 and 1986. The already high 21-percent annual growth in chemical engineering employment by educational institutions for the period 1976-84 rose still more, increasing to 31 percent yearly for 1984-86; the Federal rate more than doubled, rising from 8 percent to 17 percent. The absolute numbers in these sectors, however, are too small to greatly influence the overall trend in chemical engineer employment.

Undergraduate chemical engineering enrollments responded to the mid-eighties decline in demand for chemical engineers. Between 1982 and 1986, enrollments fell 43 percent, to 20,600. Chemical engineering alone accounted for nearly 60 percent of the 27,700 decline in total engineering undergraduate enrollments during this time. At the graduate level, enrollments in chemical engineering declined 2 percent yearly between 1983 and 1986, while total graduate engineering enrollments grew 3 percent yearly.

The decline in undergraduate chemical engineering enrollments was matched by the trend in new baccalaureate recipients in the field. There were 5,950 such recipients in 1986, 7.7 percent of total new engineering baccalaureates; this was down from the 6,380 in 1980 representing 10.8 percent of new engineers. At the master's level, a relative decline in new chemical engineers emerged in 1985, when 7.3 percent of all engineers with master's degrees were chemical engineers. In 1984, this proportion had been 7.5 percent; by 1986, it had fallen to 6.4 percent, or 1,380 persons.

Seventy-nine percent of the 1984-85 chemical engineering baccalaureate recipients were working in 1986, 17 percent were full-time graduate students, and 4 percent were not employed. At the master's level these proportions were, respectively, 73 percent, 24 percent, and 3 percent.

Over the 1977-87 decade, new Ph.D. chemical engineers slowly grew from 11.8 percent of all new doctoral engineers to 14 percent. Thus, new Ph.D. chemical engineers increased from 310 in 1977 to 530 by 1987; overall, doctoral engineers advanced from 2,640 to 3,720.

Non-U.S. citizens received 45 percent of the Ph.D.s awarded in chemical engineering in 1987, versus 47 percent in 1977. This compares with 55 percent and 43 percent, respectively, for all engineers.

Federal funding for chemical engineering research has grown substantially. Increases in Federal obligations for both basic and applied research in chemical engineering have outpaced growth in overall engineering obligations between 1977 and 1987.

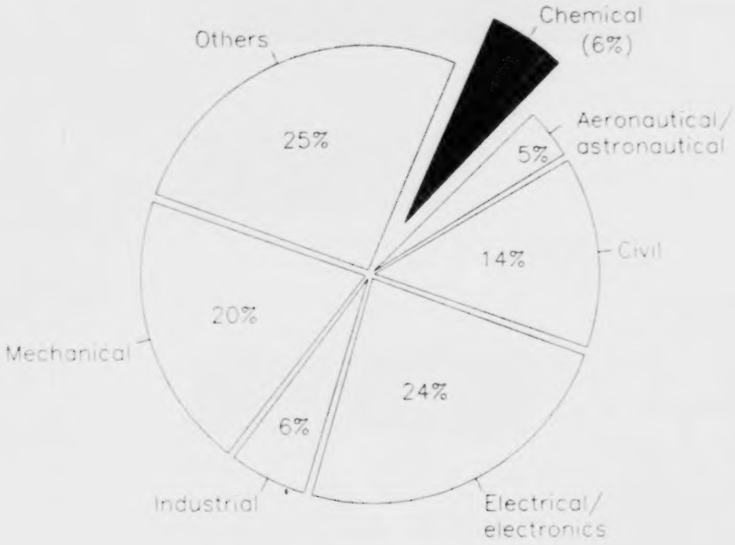
Of the $79 million in Federal funds obligated for basic research in chemical engineering in all sectors for 1987, the National Science Foundation accounted for $31 million (39 percent) and the Department of Energy for $24 million (31 percent). In applied research funding, the Department of Energy provided $103 million and the Department of Defense, $31 million. These amounts represented 60 percent and 18 percent, respectively, of the $171 million obligated in Federal funds.

ii. personnel

employment levels and trends

Employed engineers by field: 1986

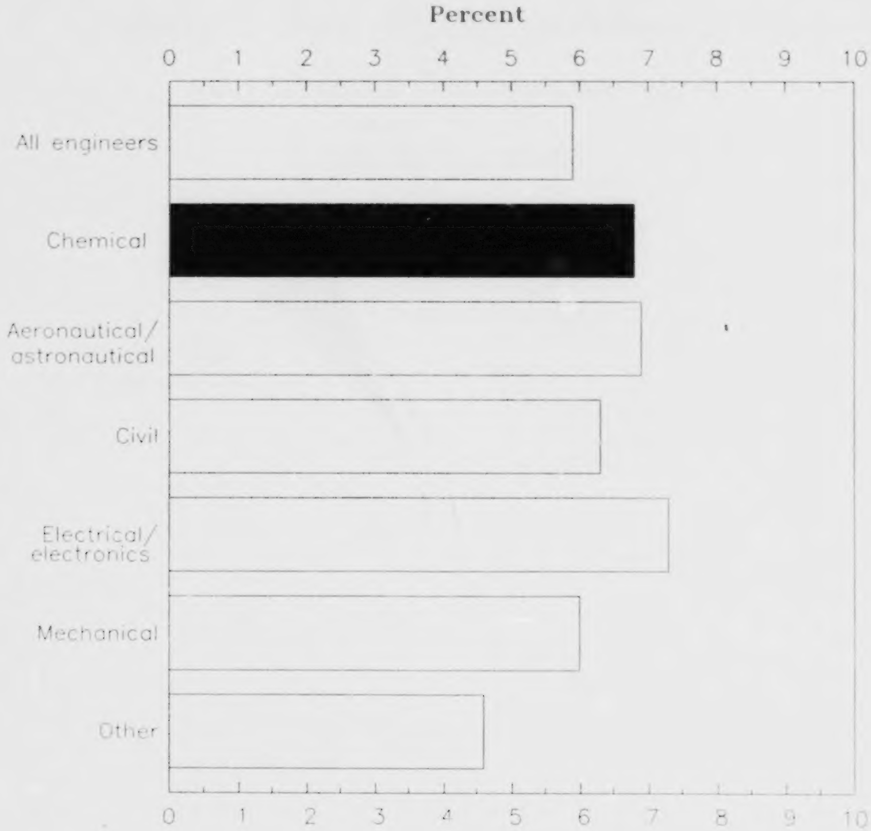
Total = 2,440,100



SOURCE: National Science Foundation, SRS; based on appendix table 1

- In 1986 there were 149,000 employed chemical engineers. They accounted for about 6 percent of total engineering employment in the United States.

Average annual employment growth rates by engineering field: 1976–86



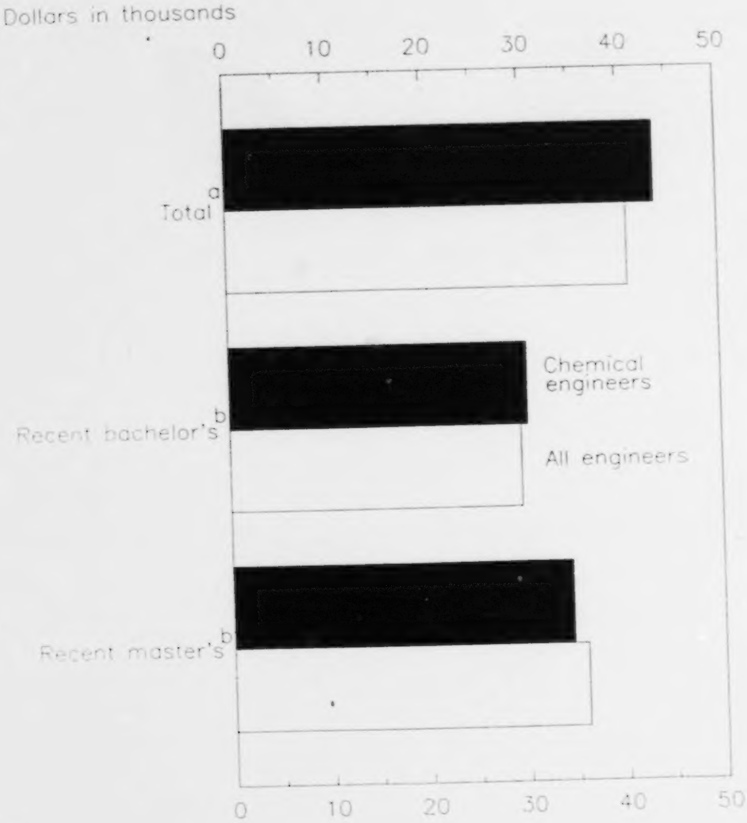
NOTE: Engineering data for 1976 are not available at any further disaggregation.

SOURCE: National Science Foundation, SRS; based on appendix table 1

- During the 1976-86 decade, employment of chemical engineers increased at an annual rate of 6.8 percent, compared to a 5.9-percent rate for all engineers combined. Only two engineering fields--electrical/ electronics and aeronautical/astronautical--had faster rates of employment growth (7.3 percent and 6.9 percent, respectively) over the decade. Most of the growth in chemical engineering occurred in the years 1976-84.

salaries

Average annual salaries by degree level



[a] Overall salaries in 1986.

[b] 1984 and 1985 recipients in 1986.

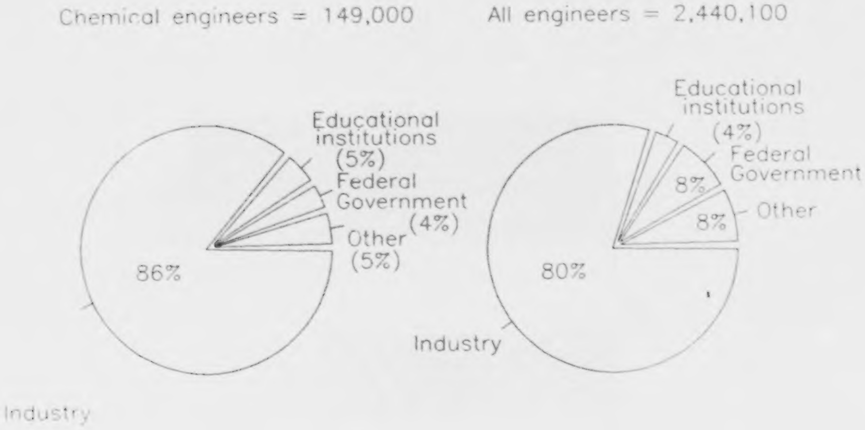
SOURCE: National Science Foundation, SRS; based on appendix tables 21 and 23

- Salaries for chemical engineers are at the upper end of the range of average salaries among engineering fields. In 1986, chemical engineers reported average salaries of $43,700. For all engineers, the average was slightly under $41,000.

- For new graduates, both chemical engineers and engineers who received baccalaureates in 1984 and 1985 earned annual salaries of about $30,000 in 1986. At the masters' degree level, however, the starting salary for chemical engineers was $34,200, well under the $36,000 for all engineers. In 1984, both groups had earned $32,000.

sector of employment

Sector of employment: 1986



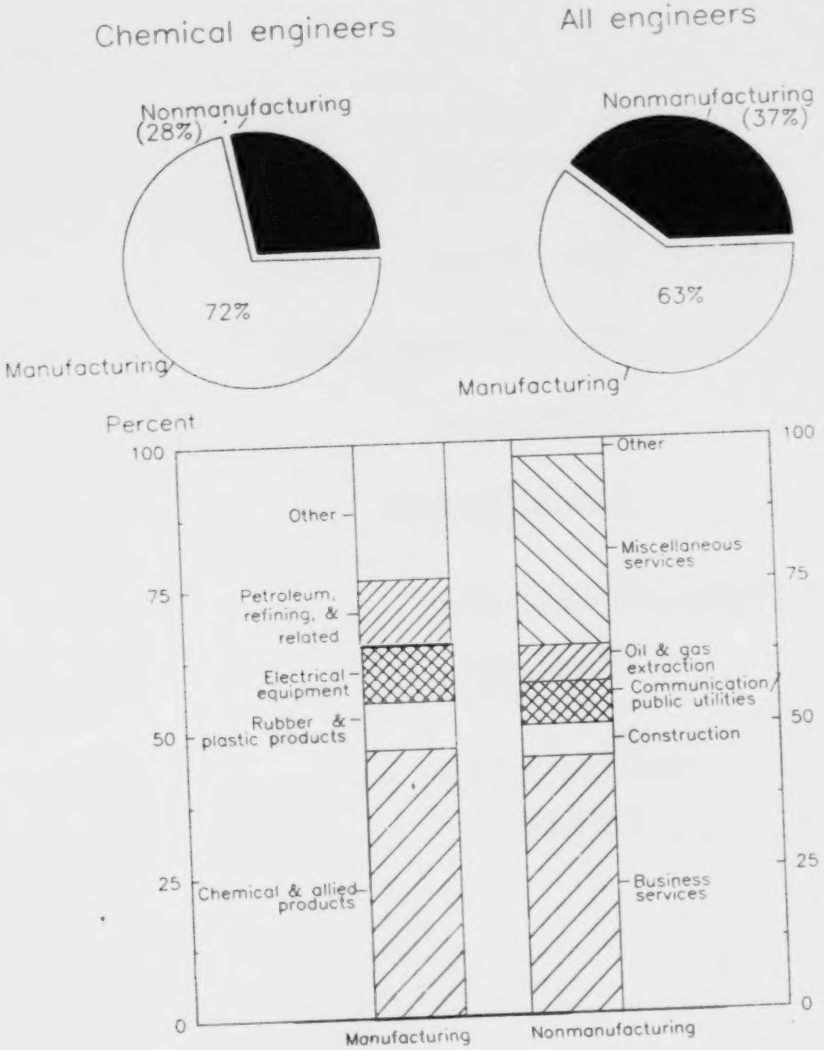
SOURCE: National Science Foundation, SRS; based on appendix table 9

- Chemical engineers are more heavily concentrated in the industrial sector than all engineers combined: 86 percent versus 80 percent. From 1976 to 1984, the number of industrial chemical engineers grew almost 8 percent per year, but only 1 percent annually thereafter.

- To some extent, educational institutions and the Federal Government have offset industry's inability to utilize more chemical engineers in recent years. Educational institutions, which increased their employment of chemical engineers over 21 percent yearly through 1984, advanced to a 31-percent annual rate for 1984-86. The Federal Government's annual rate went from 8 percent to 17 percent. Academia employed 900 chemical engineers in 1976, 4,200 in 1984, and 7,200 in 1986. The corresponding Federal totals were 2,700, 4,900, and 6,700.

jobs in private industry

Chemical engineers in manufacturing and nonmanufacturing industries: 1986



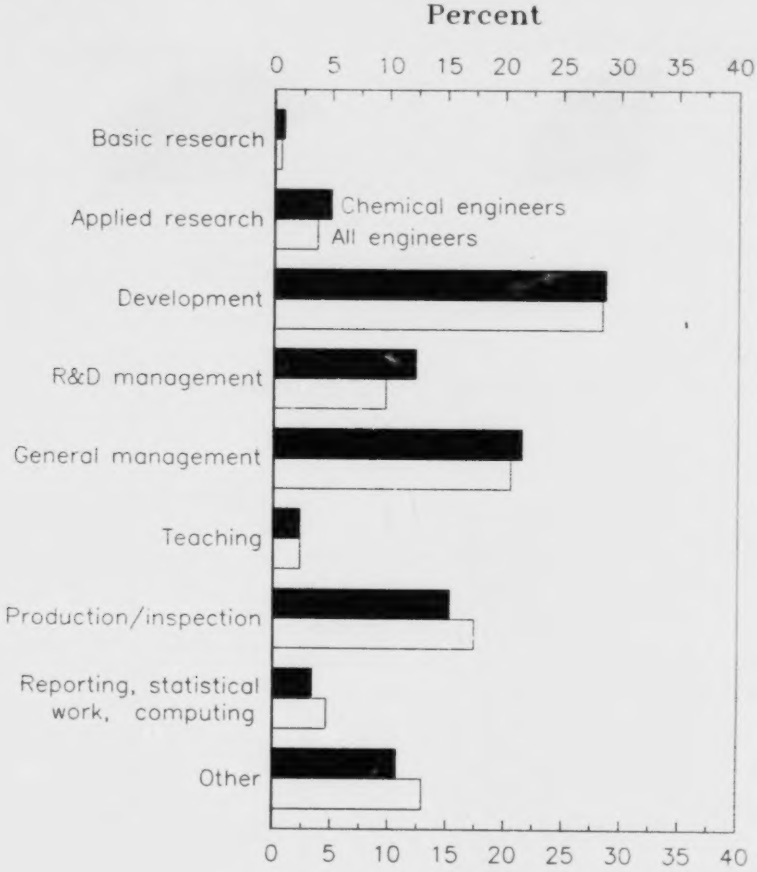
SOURCE: National Science Foundation, SRS; unpublished data

- Seven of every 10 chemical engineers in private industry worked in the manufacturing sector in 1986, compared to about 6 of every 10 engineers overall.2/

- About 47 percent of the chemical engineers employed in manufacturing were in the chemical and allied products industry; the next largest group, 11 percent, were in the petroleum refining and related industries.

2/ Data for this section are adapted from the Bureau of Labor Statistics' "Occupational Employment Statistics Survey" and the most recent Occupational Matrix.

Primary work activities: 1986

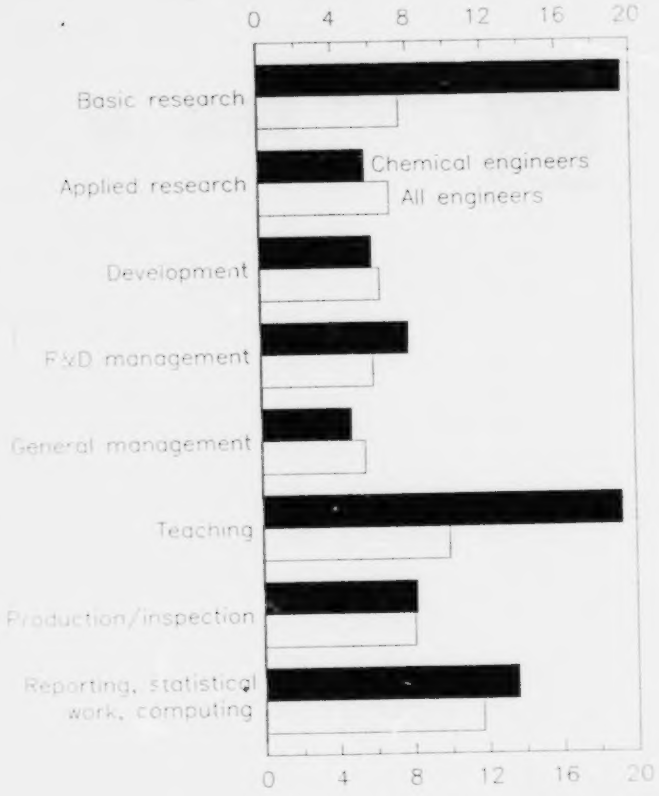


SOURCE: National Science Foundation, SRS; based on appendix table 13

- In 1986, almost three-tenths of both chemical engineers and total engineers reported development as their primary work activity. Another one-fifth of each group reported general management, excluding management of research and development (R&D) as their primary work activity.

- The distribution of chemical engineers by work activity has changed little since 1976. The largest upward shifts occurred in the shares primarily engaged in production/ inspection activities, which increased from 13 percent to 15 percent, and R&D management, up from 11 percent to 12 percent. The largest declines were in general management (from 26 percent to 22 percent) and development (from 31 percent to 29 percent).

Average annual growth rates by selected primary work activity: 1976-86

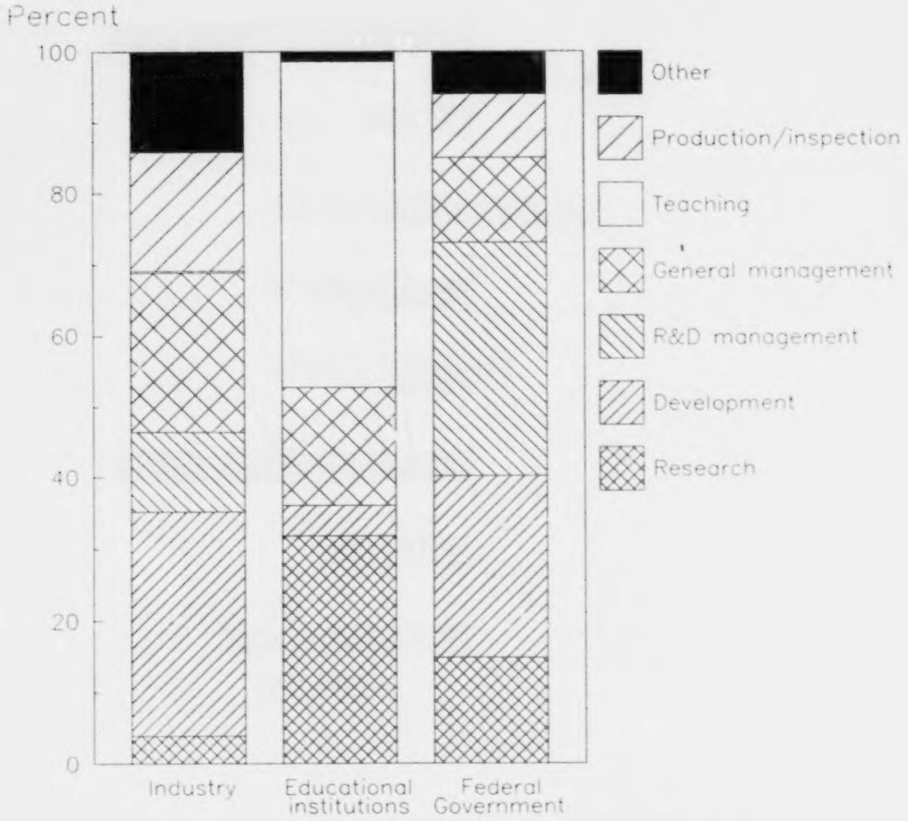


SOURCE: National Science Foundation, SRS; based on appendix table 13.

- o Development and general management were the most frequently reported work activities of chemical engineers between 1976 and 1986. Despite this, these activities registered growth rates below those of such other activities as production/inspection; reporting, statistical, and computing work; basic research; and teaching. For example, while the number of chemical engineers in development rose at an annual rate of 6.0 percent, basic research and teaching each rose at an annual average rate of about 20 percent.

- o Although teaching and basic research were the fastest growing work activities of chemical engineers over the decade, they accounted for only 2 percent and 1 percent, respectively, of chemical engineers in 1986.

Primary work activities of chemical engineers
by selected sector: 1986

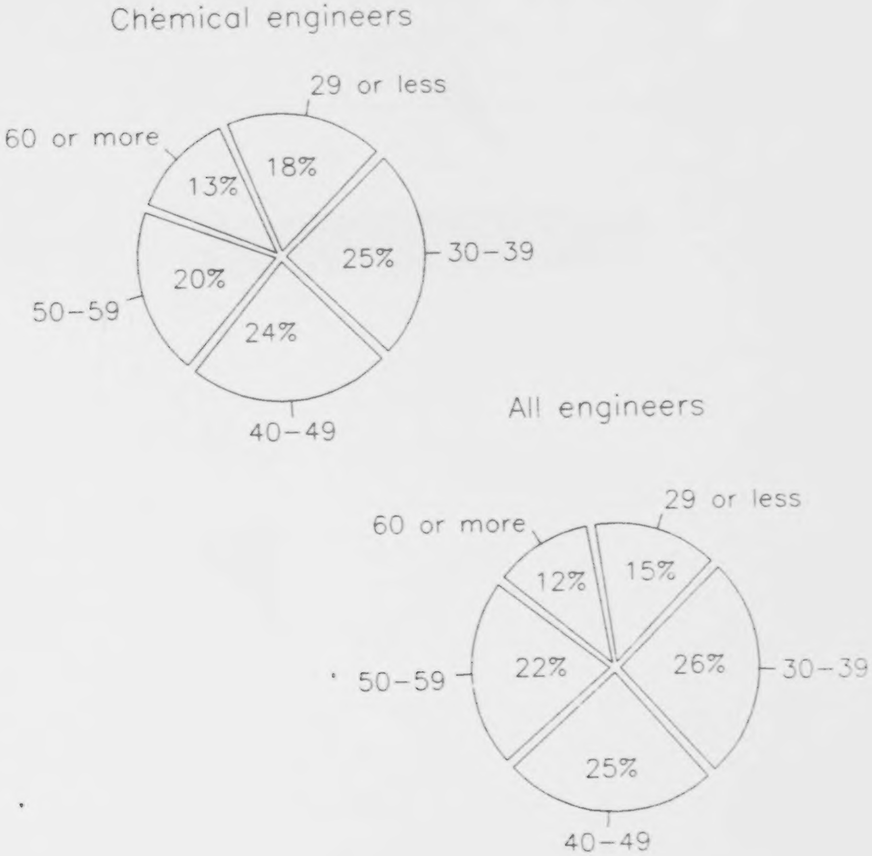


SOURCE: National Science Foundation, SRS; based on appendix table 12

- The work activities of chemical engineers vary greatly by sector. For example, those employed by industry in 1986 were more likely to work in development, management, or production. Those in the academic sector concentrated more on research, teaching, or general management. Finally, in the Federal sector, R&D management, research, and development accounted for 7 of every 10 chemical engineers.

demographic characteristics

Employment by age distribution: 1986

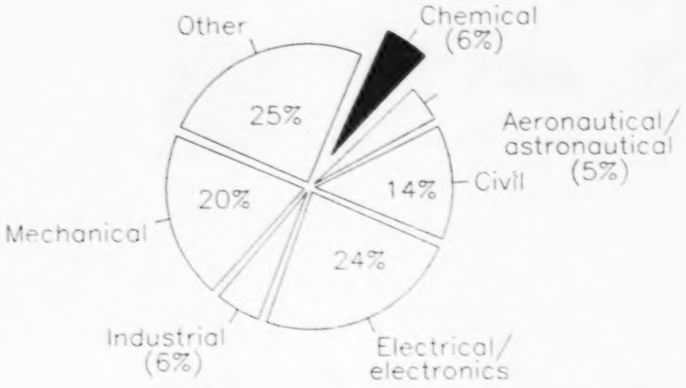


SOURCE: National Science Foundation, SRS; based on appendix table 16

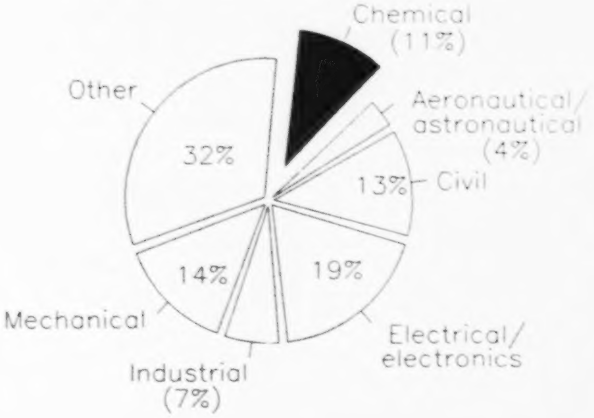
- The average age of chemical engineers has risen substantially since 1976. By 1986, the proportion 50 years of age or over rose from 25 percent to 33 percent; concurrently, the proportion under age 30 was 19 percent, down from 32 percent 10 years earlier. These changes in age distribution are similar to the patterns for all engineers combined. Total engineers under 30 dropped from 23 percent of chemical engineers in 1976 to 15 percent; and those 50 or older rose from 25 percent to 34 percent.

Employed engineers by field and sex: 1986

Men = 2,341,100



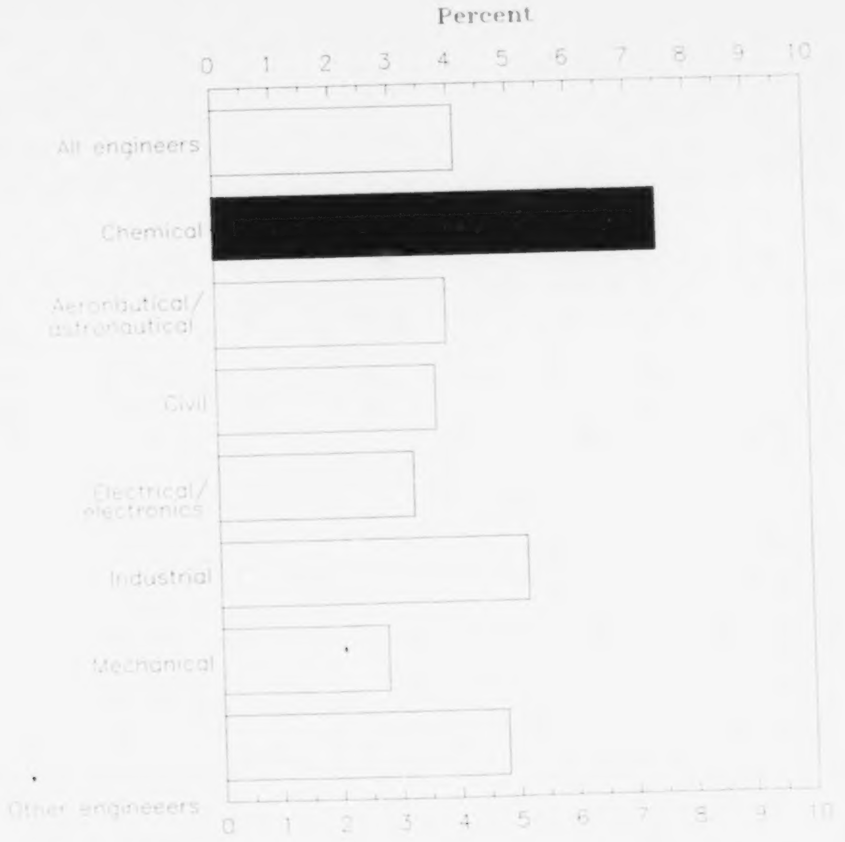
Women = 99,000



SOURCE: National Science Foundation, SRS; based on appendix table 2

- Within engineering, women are nearly twice as likely as men to be chemical engineers. About 11 percent of all female engineers were chemical engineers in 1986, compared to about 6 percent of males.

Employed women as a percent of engineers by field: 1986



SOURCE: National Science Foundation, SRS; based on appendix table 2

- About 11,200 women were chemical engineers in 1986, or 8 percent of all engineers in this field. By comparison, women account for only 4 percent of all engineers combined.

- The increase in women entering the chemical engineering field between 1976 and 1986 was 2.5 times that for men. Over the decade, the growth in employment of women was almost 16 percent annually; it was 6 percent for men. These rates were very similar to those for all engineers combined: 17 percent versus 6 percent.

Employed engineers by field and minority group: 1986

Field	White	Black	Asian	Native American	Hispanic (1)
All engineers	2,217,300	41,300	132,800	13,300	47,200
	Percent				
Total	100.0	100.0	100.0	100.0	100.0
CHEMICAL	6.0	4.8	7.6	6.8	5.7
Aeronautical/astronautical	4.5	3.9	5.0	3.0	3.2
Civil	13.9	12.6	18.4	8.3	15.5
Electrical/electronics	23.1	28.8	28.5	24.8	25.8
Industrial	5.8	6.1	2.9	5.3	5.3
Mechanical	20.4	16.2	18.5	21.8	19.1
Other (2)	26.2	27.6	19.1	30.1	25.4

(1) Includes members of all racial groups.

(2) Includes materials, mining, nuclear, petroleum, and other engineers.

SOURCE: National Science Foundation, SRS; based on appendix table 3

- Blacks were less likely than members of other racial groups to be chemical engineers. In 1986, about 5 percent of black engineers were chemical engineers, compared with between 6 and 8 percent of white, Asian, Hispanic, and native American engineers.
- Between 1976 and 1984, employment in chemical engineering rose faster for Asians (20 percent per year) than for whites (7 percent). However, between 1984 and 1986, Asian employment in this field declined 1 percent annually, while whites advanced 4 percent yearly and Hispanics declined 4 percent yearly. Meanwhile, the ratio of black chemical engineers remained unchanged for 1976-84, and then also advanced for 1984-86.

Minorities as a percent of employment in engineeriing fields: 1986

Field	Total		Black	Asian	Native American	Hispanic (1)
	Number	Percent				
	Percent					
All engineers	2,440,100	100.0	1.7	5.4	0.5	1.9
CHEMICAL	149,000	100.0	1.3	6.8	0.6	1.8
Aeronautical/astronautical	110,500	100.0	1.4	6.0	0.4	1.6
Civil	346,300	100.0	1.5	7.1	0.3	2.1
Electrical/electronics	574,500	100.0	2.1	6.6	0.6	2.1
Industrial	137,700	100.0	1.8	2.8	0.5	1.8
Mechanical	492,600	100.0	1.4	5.0	0.6	1.8
Other (2)	629,500	100.0	1.8	4.0	0.6	1.9

(1) Includes members of all racial groups.

(2) Includes materials, mining, nuclear, petroleum, and other engineers.

SOURCE: National Science Foundation, SRS; based on appendix table 3

o The 149,000 chemical engineers in 1986 included 10,100 Asians (6.8 percent), 2,700 Hispanics (1.8 percent), 2,000 blacks (1.3 percent), and 900 native Americans (.6 percent). In 1984, Asians had been 9.1 percent of all chemical engineers, and Hispanics, 2.3 percent.

labor market indicators 3/

Selected market characteristics: 1986

(Percent)

Characteristic	Chemical engineers	All engineers
Labor force participation rate.....	89.1	93.8
Unemployment rate..................	2.6	1.2
S/E employment rate..........	88.3	91.9
S/E underemployment rate...........	1.9	1.0
S/E underutilization rate..........	4.5	2.2

SOURCE: National Science Foundation, SRS; appendix table 18

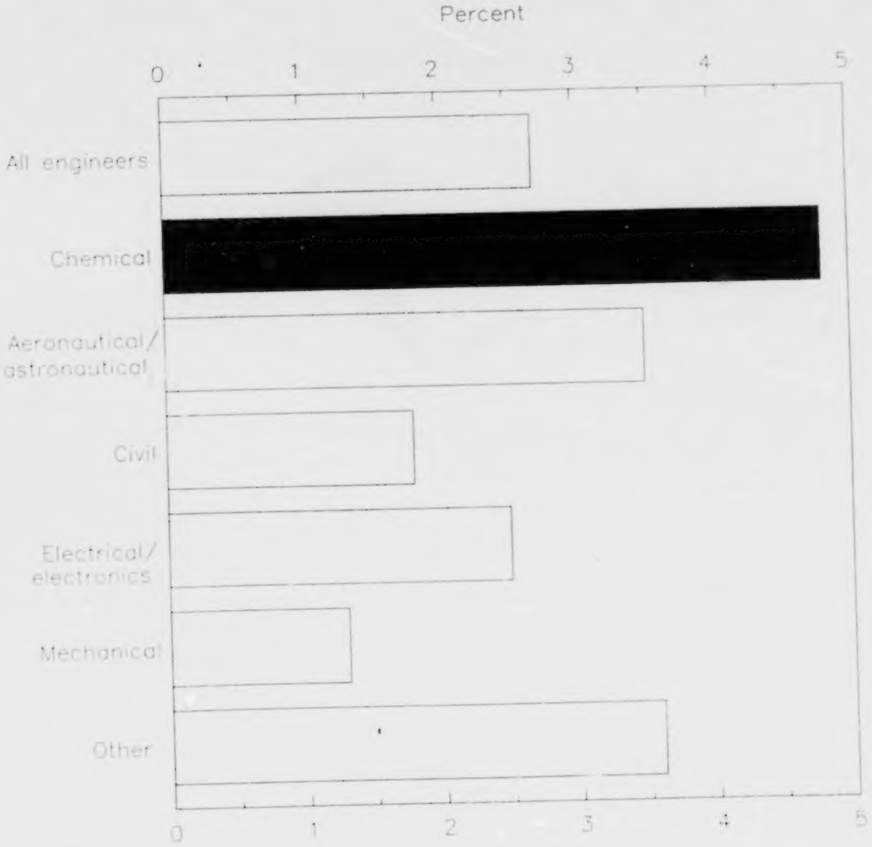
- The unemployment rate for chemical engineers in 1986 was 2.6 percent versus 2.4 percent in 1984; the comparable rate for all engineers was 1.2 percent in both years. This weakness in demand for chemical engineers in the unemployment indicator shows also in other labor market indicators.

- In 1984, the labor force participation rate for chemical engineers had been 91.7; the science and engineering (S/E) underemployment rate was 1.8; the S/E employment rate was 91.0; and the S/E underutilization rate was 4.1. The same rates for 1986 were 89.1, 1.9, 88.3, and 4.5, respectively. In general, the market indicators for engineers overall show a better situation in both years.

3/ The science and engineering (S/E) employment rate measures the extent to which employed scientists and engineers have a job in science or engineering. The S/E underemployment rate measures the extent of potential underemployment (i.e., those who are involuntarily working in non-S/E jobs or involuntarily working part time) as a percentage of total employment of scientists and engineers. See appendix A, Technical Notes, for more complete definitions.

chemical engineers with doctorates

Doctoral intensity rate by enginering field: 1986



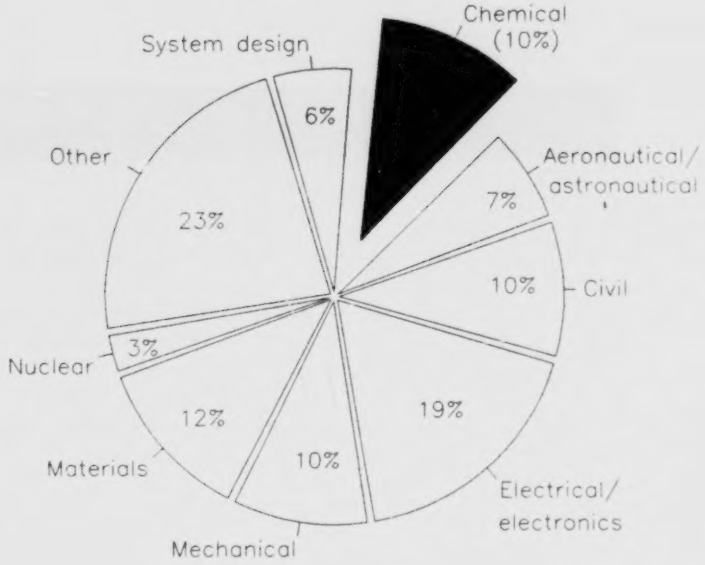
NOTE: Doctoral intensity is defined as doctoral employment as a percent of total S/E employment.

SOURCE: National Science Foundation, SRS; based on appendix table 17

- **Relatively more chemical engineers hold doctorates than other types of engineers. In 1985, the doctoral intensity rate (the ratio of S/E doctorate-holders to total employment of scientists and engineers) for chemical engineers was 4.8, compared to a rate of 2.7 for all engineers combined.**

Employed doctoral engineers by field: 1987

Total = 67,800

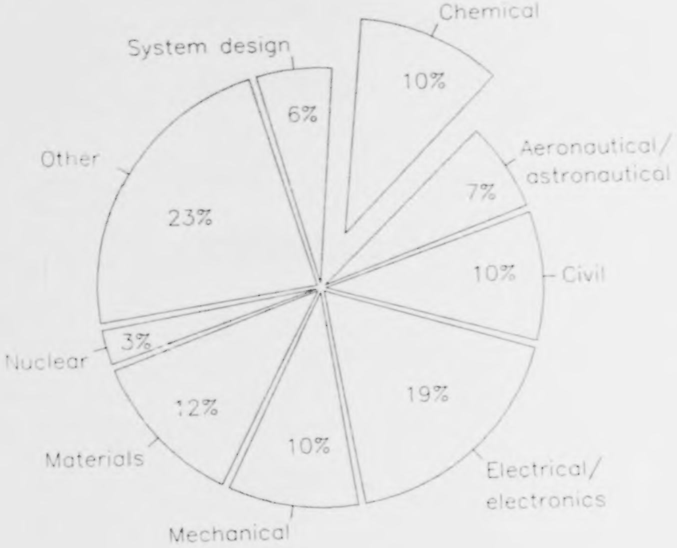


SOURCE: National Science Foundation, SRS; based on appendix table 4

- Almost 5 percent of those employed as chemical engineers hold doctorates. This is by far the highest percentage among the engineering fields. The next highest percentage is the 3.5 percent of aeronautical/astronautical engineers. No other field exceeds a 2.5 percent rate.

Employed doctoral engineers by field: 1987

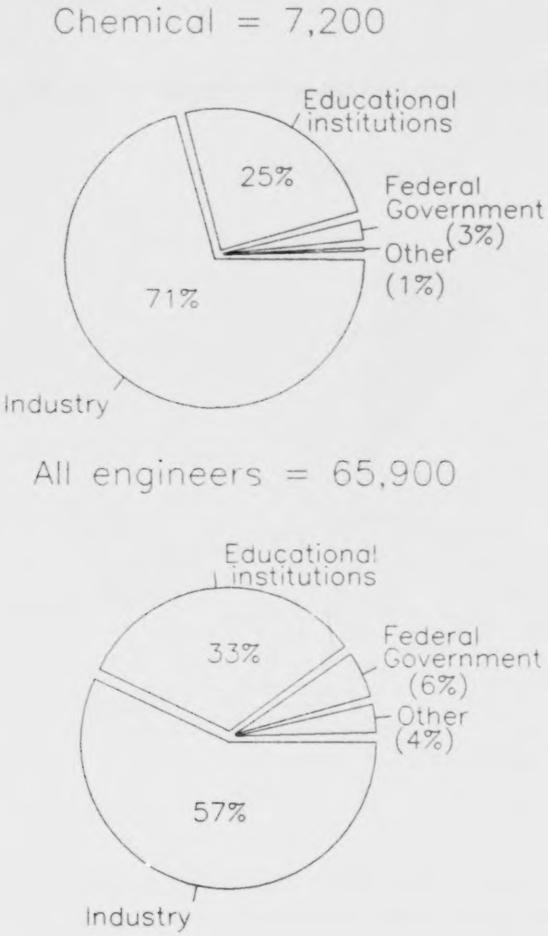
Total = 67,800



SOURCE: National Science Foundation, SRS; based on appendix table 4

- Almost 5 percent of those employed as chemical engineers hold doctorates. This is by far the highest percentage among the engineering fields. The next highest percentage is the 3.5 percent of aeronautical/ astronautical engineers. No other field exceeds a 2.5 percent rate.

Doctorate-holders by sector of employment: 1985



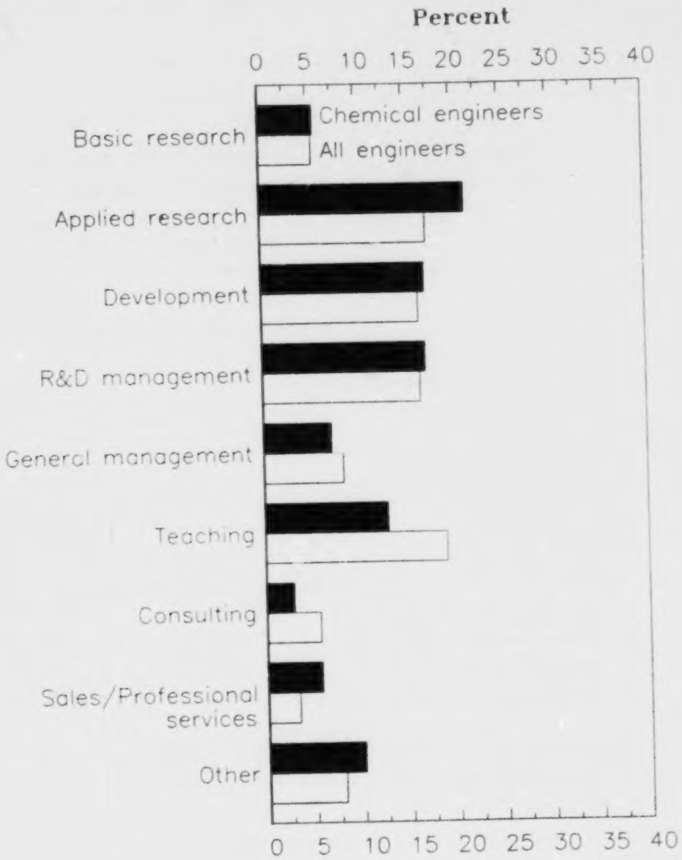
Chemical = 7,200

All engineers = 65,900

SOURCE: National Science Foundation, SRS; based on appendix table 10.

- Virtually all (96 percent) Ph.D. chemical engineers are employed in two economic sectors: industry and academia. In 1987, doctoral chemical engineers were more likely to be in industry (68 percent) than were total engineers (55 percent). Conversely, educational institutions employed 28 percent of chemical engineers, and 35 percent of total engineers in 1987.
- Educational institutions and industry each accounted for about one-half of the Ph.D. chemical engineer increase between 1977 and 1987. Overall, Ph.D. chemical engineers advanced from 5,600 in 1977 to 6,900 in 1987.

Doctorate-holders by primary work activities: 1985



SOURCE: National Science Foundation, SRS; based on appendix table 24

- o Chemical engineers with doctorates in 1987 most frequently cited research and development (48 percent), R&D management (15 percent) or teaching (16 percent) as their primary work activity. Comparable proportions for all Ph.D. engineers were 44 percent, 16 percent, and 17 percent, respectively. R&D chemical engineers most often worked in applied research or development; total R&D engineers primarily worked on development.

- o Over the 1977-87 decade, the fastest growing work activities for doctorate-holders were sales and professional services and basic research. Chemical engineers in sales/professional services grew from 200 to 500, and total engineers from 900 to 1,100. Chemical engineers in basic research advanced from 200 to 500, and total engineers from 1600 to 3500 over the trend period. To some extent, growth in these two activities offset the 33-percent decline of chemical engineers in general management. However, sales and professional services and basic research employed only 12 percent of Ph.D. chemical engineers in 1987.

Academic rank and tenure status of doctorate-holders: 1987

Rank and tenure status	Ph.D. chemical engineers	All Ph.D. engineers
	Percent	
Academic rank	100	100
Full professor	48	49
Associate professor	25	21
Assistant professor	15	16
Instructor	(1)	(1)
Administrator	7	5
Other and no report	5	9
Tenure status	100	100
Tenured	57	57
Tenure track	19	17
Non-tenure track	4	5
Unknown and no report	20	21

(1) Too few cases to estimate.

SOURCES: National Science Foundation, SRS; Characteristics of Doctoral Scientists and Engineers in the United States, 1987; and unpublished data

- Academic rank among Ph.D. chemical engineers closely parallels that for all engineers combined. For instance, chemical engineers are as likely as all engineers to hold full professorships: the proportions for both was nearly 50 percent in 1987. Similarly, the assistant professor level accounted for 15 percent of chemical engineers and 16 percent of all engineers. At least partially reflecting these differences in academic rank, 57 percent of chemical engineers and of all engineers were in tenure-track positions in 1987.

- The distribution of Ph.D. chemical engineers in academia in 1987 differed from the 1977 distribution. In 1977, full professors accounted for 56 percent of doctoral chemical engineers in academia; associate professors, 22 percent; and assistant professors, 10 percent. This change in distribution reflects (1) a 5-percent average annual growth between 1977 and 1987 in academic employment of chemical engineering Ph.D.'s and (2) the replacement of retirees and otherwise separated personnel.

iii. education pipeline

Undergraduate enrollment

Undergraduate engineering enrollment by curriculum: fall 1986

Field	Full time	Part time
Total	369,520	38,137
CHEMICAL	20,551	1,303
Aerospace	16,662	738
Agricultural	1,822	71
Architectural	2,090	83
Bioengineering	3,627	146
Ceramic	1,323	41
Civil	32,748	3,205
Computer	19,956	3,008
Electrical	112,843	14,833
Engineering science	5,144	574
Environmental	639	29
General	10,701	1,282
Industrial	15,914	1,747
Marine	2,273	27
Materials and metallurgy	3,125	284
Mechanical	67,391	7,685
Mining	1,607	52
Nuclear	1,665	51
Petroleum	2,674	118
Pre-engineering (1)	44,340	12,272
Systems	2,130	229
Other	995	311

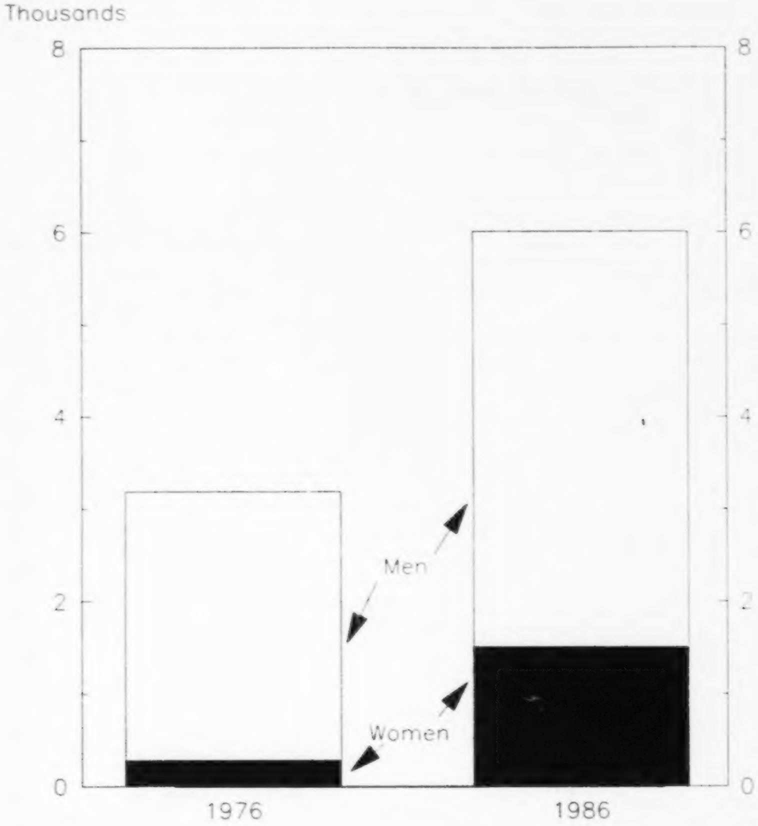
(1) Includes undeclared majors.

SOURCE: Time series data of the Engineering Manpower Commission, American Association of Engineering Societies.

- In the fall of 1986, 20,600 undergraduate students were enrolled full time in chemical engineering programs. Enrollment in this curriculum represented the sixth largest share, 6 percent, of the total undergraduates in engineering. The largest share (30 percent) was in electrical/electronics engineering programs.

- Undergraduate enrollment in chemical engineering in 1986 was 11 percent lower than it had been 10 years earlier. Most notably, between 1982 and 1986, undergraduate enrollments in this field were down 43 percent; almost all of this decline was in full-time enrollments. The field's dramatic drop in enrollment accounted for nearly three-fifths of the 6-percent overall decline in total engineering enrollments since 1982. Between 1975 and 1982, total engineering enrollments had increased at a 6.6-percent annual rate.

Bachelor's–degree recipients in chemical engineering: 1976–86

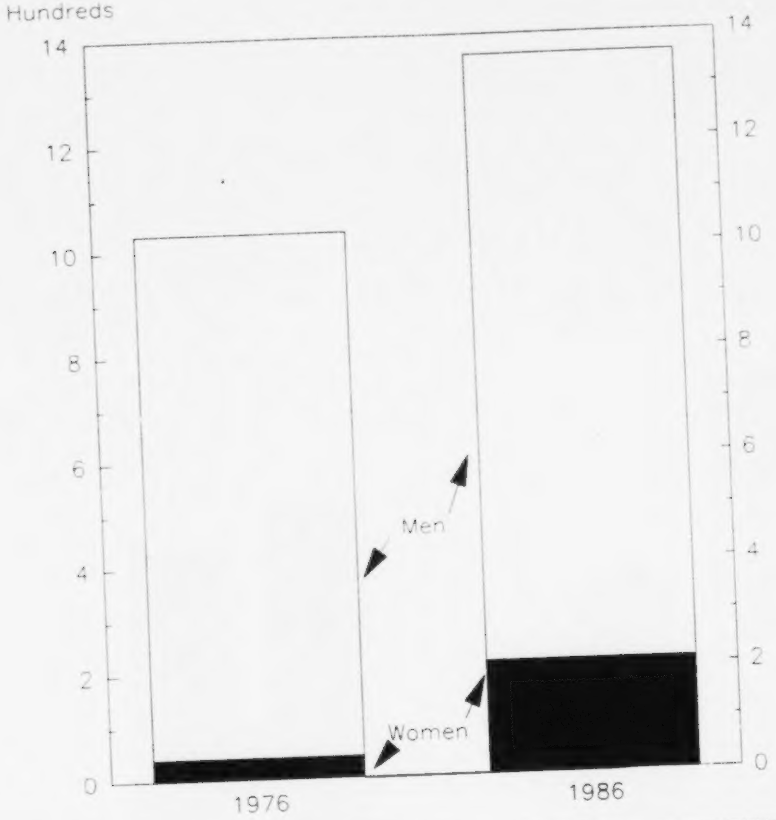


Field and sex	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Engineering, total.	39,114	41,581	47,411	53,720	59,240	64,068	67,791	72,954	76,531	77,871	77,0
Men..................	37,671	39,495	43,914	48,801	53,226	56,951	59,454	63,235	65,698	66,555	65,8
Women................	1,443	2,086	3,497	4,919	6,014	7,117	8,337	9,719	10,833	11,316	11,2
Chemical engineering	3,203	3,581	4,615	5,655	6,383	6,604	6,814	7,256	7,558	7,222	5,9
Men..................	2,927	3,152	3,899	4,649	5,168	5,336	5,328	5,618	5,661	5,347	4,4
Women................	276	429	716	1,006	1,215	1,268	1,486	1,638	1,897	1,875	1,4

SOURCE: National Science Foundation, SRS; appendix table 24

o Between 1976 and 1986, the percentage of baccalaureate degrees awarded to chemical engineers dropped from 8.2 percent to 7.7 percent. Despite this decline, by 1986 women accounted for 25 percent of the bachelor's degrees granted in chemical engineering, up from 9 percent in 1976; similarly, they received 15 percent of engineering baccalaureates awarded in 1986 versus 4 percent in 1976.

Master's-degree recipients in chemical engineering: 1976-86



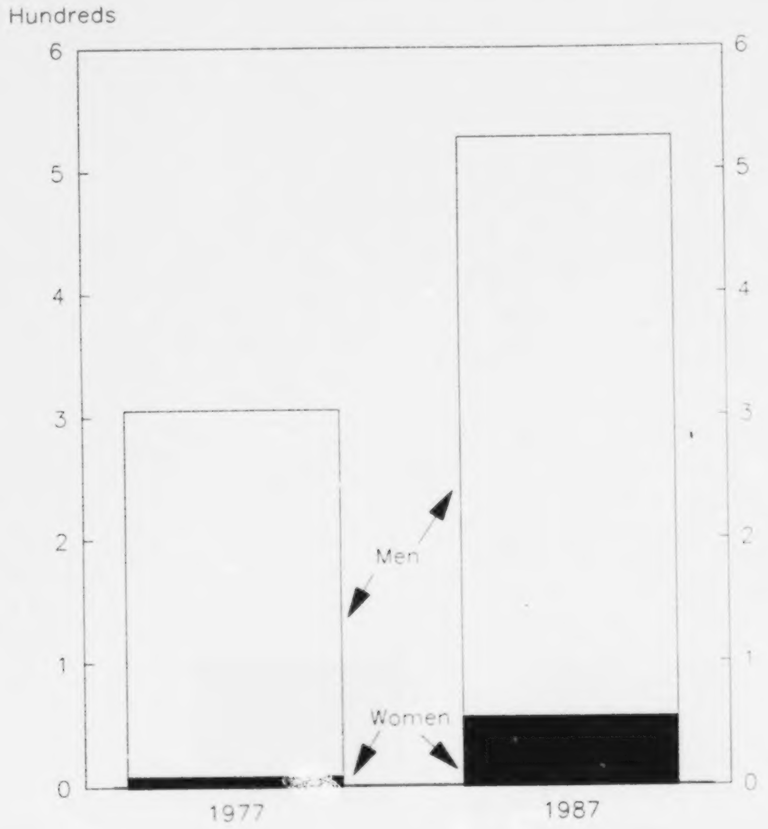
Field and sex	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Engineering, total..	16,170	16,889	17,015	16,193	16,846	17,373	18,594	19,721	20,352	21,206	21,314
Men................	15,581	16,156	16,144	15,203	15,656	15,967	16,910	17,845	18,193	18,878	18,848
Women..............	589	733	871	990	1,190	1,406	1,684	1,876	2,159	2,328	2,471
Chemical engineering	1,031	1,086	1,237	1,149	1,271	1,268	1,287	1,371	1,517	1,549	1,367
Men................	992	1,021	1,150	1,035	1,138	1,105	1,106	1,207	1,323	1,281	1,153
Women..............	39	65	87	114	133	163	181	164	194	268	214

SOURCE: National Science Foundation, SRS; appendix table 25

- About 1,400 master's degrees were granted in chemical engineering in 1986, 6 percent of all master's engineering degrees. Over the decade, the increase in the number of degrees granted in this field equalled the 3 percent rate for all engineering fields combined.

- Women received 16 percent of master's degrees in chemical engineering 1986, somewhat higher than their share of all engineering master's degrees (12 percent).

Doctorate recipients in chemical engineering: 1977-1987



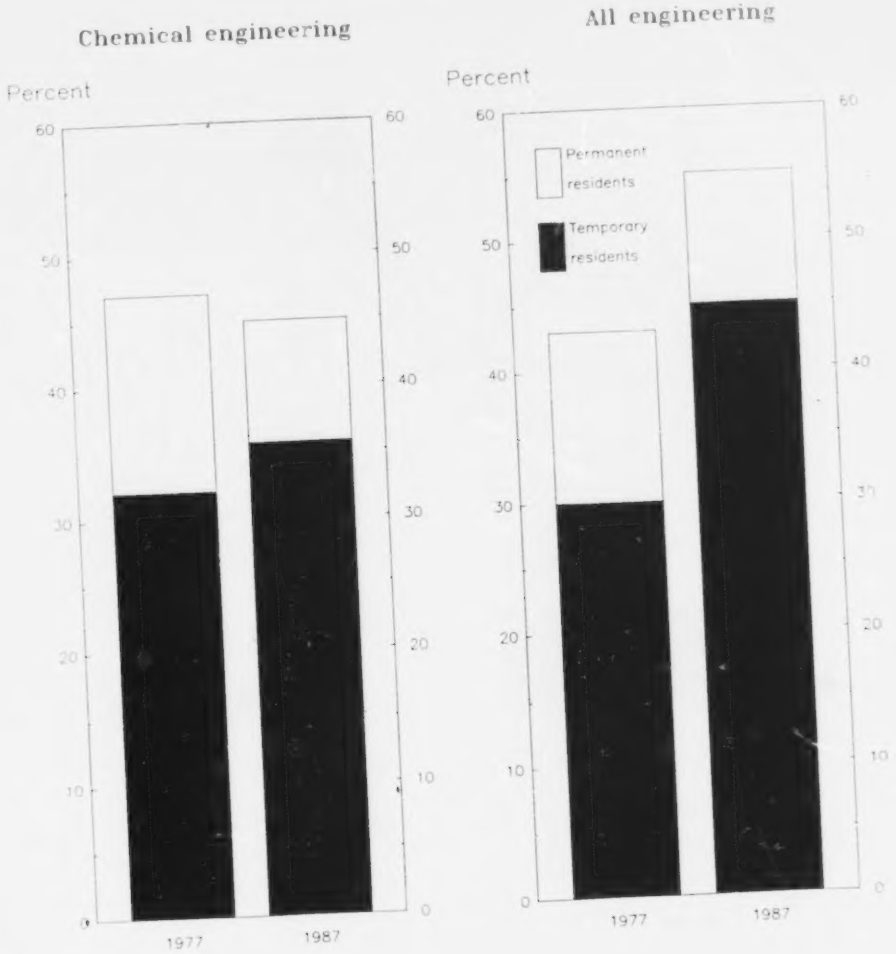
Field and sex	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Engineering, total..	2,643	2,423	2,490	2,479	2,528	2,646	2,781	2,913	3,165	3,376	3,716
Men................	2,569	2,370	2,428	2,389	2,429	2,522	2,657	2,762	2,967	3,151	3,474
Women..............	74	53	62	90	99	124	124	151	198	225	242
Chemical engineering	306	261	287	285	296	306	349	361	440	476	528
Men................	297	256	279	271	285	289	327	336	405	423	472
Women..............	9	5	8	14	11	17	22	25	35	53	56

SOURCE: National Science Foundation, SRS; appendix table 26

- In 1987, 528 doctoral degrees were awarded in chemical engineering, or 14 percent of all engineering doctorates. This represented an increase of 73 percent in chemical engineering doctorates between 1977 and 1987, compared to a 41 percent increase in engineering Ph.D.'s overall.

- Women received 11 percent of the doctorates granted in chemical engineering in 1987, compared to 7 percent of the Ph.D.'s in all fields of engineering combined.

Non-U.S. citizens as a percent of doctorate recipients: 1977-87

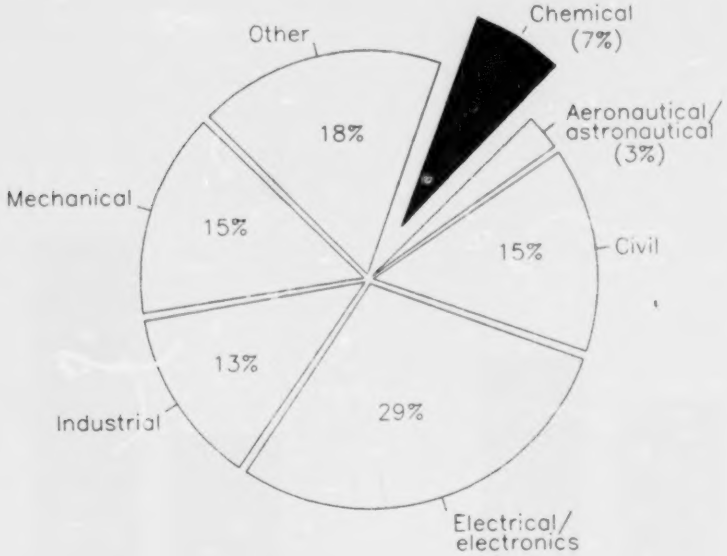


SOURCE: National Science Foundation, SRS; based on appendix table 27

- About 45 percent of the doctoral degrees in chemical engineering in both 1977 and 1987 were awarded to non-U.S. citizens. Overall, non-U.S. citizens earned 55 percent of the engineering Ph.D.'s in 1987, up from 43 percent in 1977.

- During the 1977-87 decade, there was a marked increase in the number of doctorates in chemical engineering granted to temporary residents. While permanent residents earning degrees in this field stayed constant over the decade at about 45, the number of temporary residents rose 88 percent, increasing from 97 to 182. Meanwhile, the number of U.S. citizens earning doctorates in chemical engineering increased from 160 to 281.

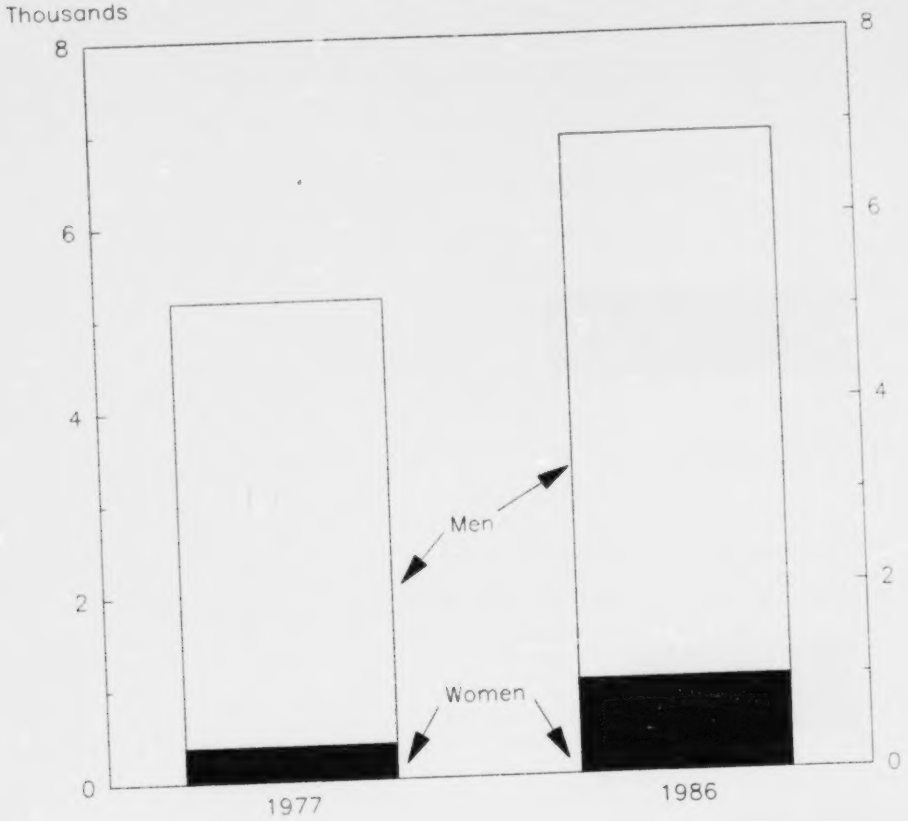
Graduate enrollment by engineering field: 1986



SOURCE: National Science Foundation, SRS; based on appendix table 28

- In 1986, chemical engineering accounted for 7 percent of the total full- and part-time graduate enrollments in engineering. The enrollments in chemical engineering rose faster between 1977 and 1983 than in total engineering: 6 percent versus 5 percent. From 1983 to 1987, total engineering enrollments rose 3 percent yearly, while chemical engineering declined 2 percent annually.

Graduate enrollment in chemical engineering by sex: 1977–86

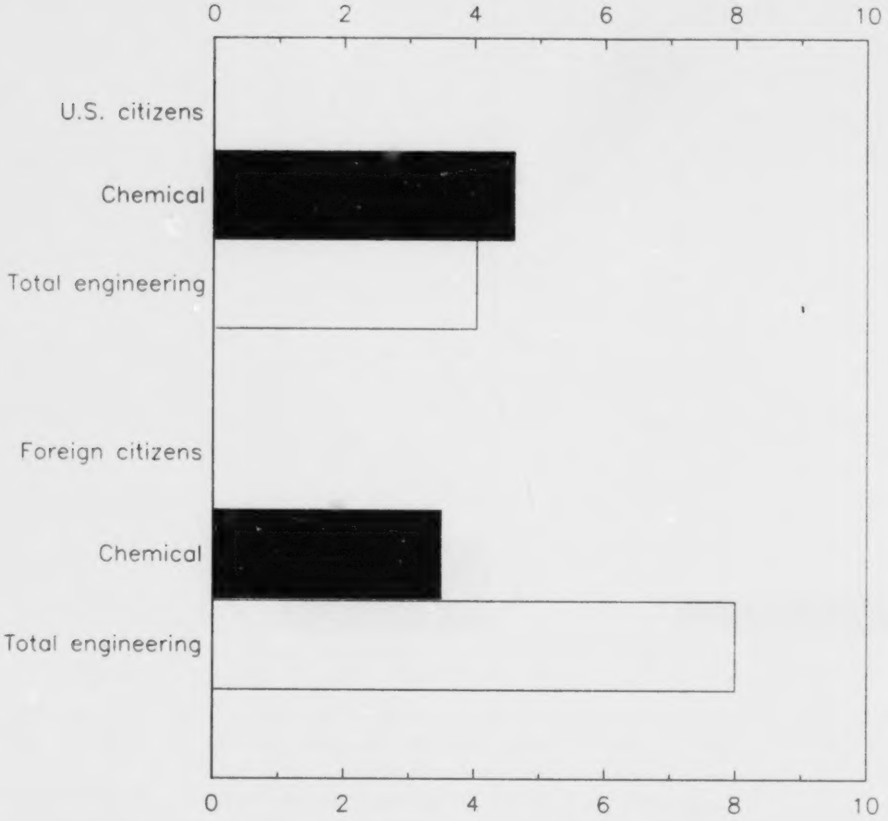


Field and sex	1977	1979	1980	1981	1982	1983	1984	1985	1986
Engineering, total..	69,142	72,262	75,084	80,479	84,594	93,155	96,820	100,368	105,294
Men................	65,307	66,235	68,581	72,548	75,621	82,793	85,669	88,348	92,060
Women..............	3,835	6,027	6,503	7,931	8,973	10,362	11,151	12,020	13,234
Chemical engineering	5,201	5,605	6,015	6,496	7,189	7,563	7,445	7,156	6,963
Men................	4,827	4,991	5,336	5,718	6,288	6,547	6,462	6,140	5,931
Women..............	374	614	679	778	901	1,016	983	1,016	1,032

SOURCE: National Science Foundation, SRS: appendix table 28

- Although women now earn 25 percent of the bachelor's degrees in chemical engineering, only 15 percent of graduate students in this field are female. However, women's participation rate in chemical engineering graduate study is somewhat greater than the overall 13 percent rate for women in graduate engineering.

Annual growth rates in full-time graduate enrollment by citizenship: 1977-86



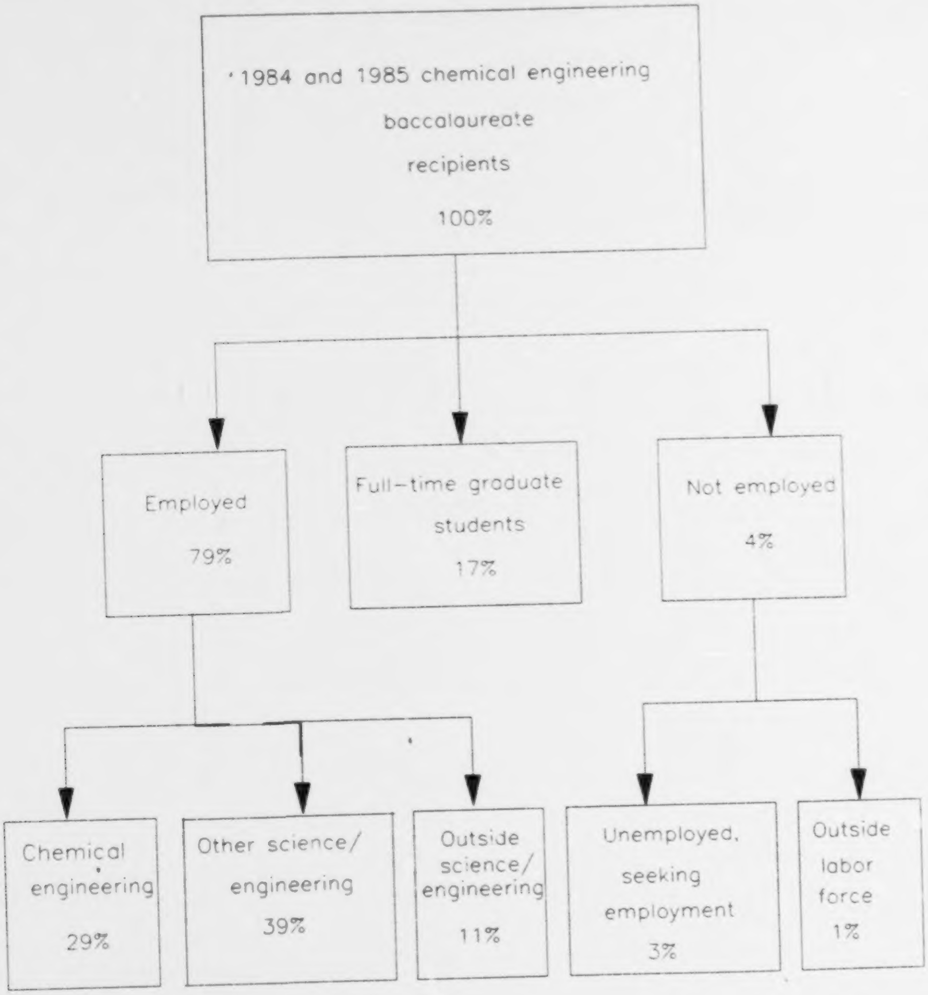
SOURCE: National Science Foundation, SRS; based on appendix table 29

- Compared to their representation among full-time graduate students enrolled in chemical engineering, foreign citizens account for a disproportionately large number of the new doctorates in this field. In 1986, about 39 percent of those enrolled in full-time graduate study in this field were non-U.S. citizens (both temporary and permanent residents): these persons received 51 percent of the chemical engineering Ph.D.'s granted that year.

- In chemical engineering, foreign citizens accounted for roughly 40 percent of full-time enrollments in 1986; this was about the same fraction as in 1977. Overall, foreign citizens represented 44 percent of full-time enrollments in engineering programs in 1986, up from 36 percent in 1977.

characteristics of recent degree recipients

Selected characteristics of 1984 and 1985 chemical engineering baccalaureate recipients: 1986

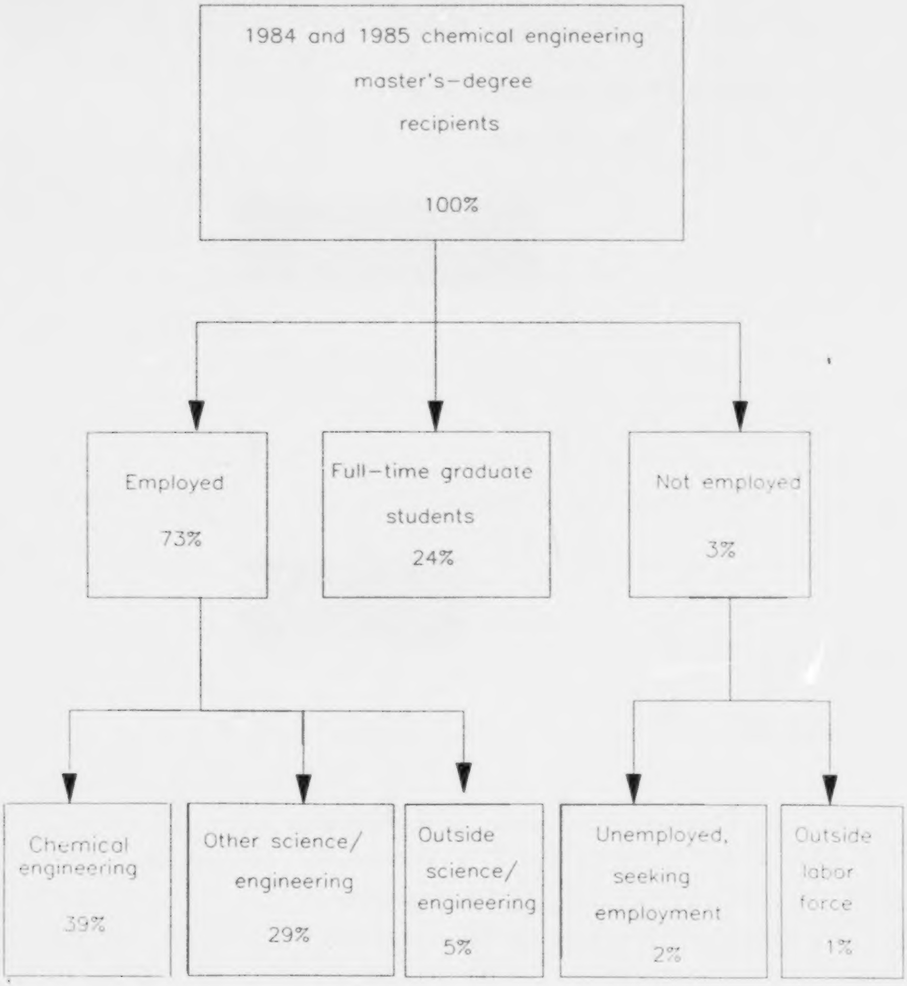

1984 and 1985 chemical engineering baccalaureate recipients
100%
Employed
79%
Full-time graduate students
17%
Not employed
4%
Chemical engineering
29%
Other science/ engineering
39%
Outside science/ engineering
11%
Unemployed, seeking employment
3%
Outside labor force
1%

SOURCE: National Science Foundation, SRS; based on appendix table 6

- A sizable fraction of chemical engineering bachelor's degree recipients pursue graduate studies on a full-time basis. Among 1984 and 1985 baccalaureate recipients, 17 percent were enrolled in fulltime graduate programs in 1986; another 12 percent were enrolled parttime. For all recent engineering degree recipients, about 10 percent were enrolled fulltime and 17 percent parttime.

- In 1986, less than 51 percent (1 of every 2) graduates in chemical engineering who entered the workforce worked in their degree field. This compares with two of every five for all engineering degree recipients.

Selected characteristics of 1984 and 1985 chemical engineering master's-degree recipients: 1986


1984 and 1985 chemical engineering master's-degree recipients
100%
Employed
73%
Full-time graduate students
24%
Not employed
3%
Chemical engineering
39%
Other science/engineering
29%
Outside science/engineering
5%
Unemployed, seeking employment
2%
Outside labor force
1%

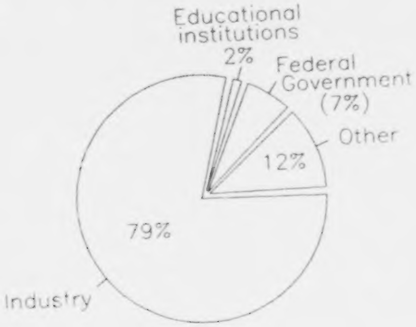
SOURCE: National Science Foundation, SRS; based on appendix table 7

- **About one in four of the 1984 and 1985 chemical engineering master's degree recipients was registered in a full-time graduate program in 1986. In contrast, only one in six of all engineering graduates was enrolled fulltime.**

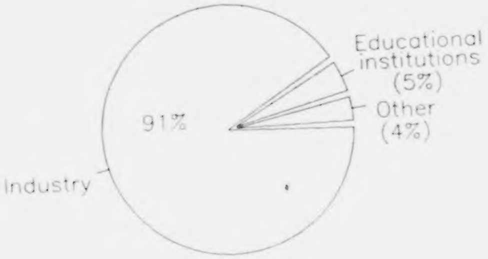
- **The in-field employment rate in 1986 was 39 percent for chemical engineering master's degree graduates, versus 50 percent for all engineering graduates.**

1984 and 1985 chemical engineering degree recipients by sector of employment: 1986

Bachelor's degree recipients



Master's degree recipients



SOURCE: National Science Foundation, SRS; based on appendix table 11

- Most of the recent bachelor's and master's degree recipients in engineering--regardless of field--were employed in industry in 1986. About 79 percent of 1984 and 1985 chemical engineering baccalaureate recipients were in this sector in 1986; this was roughly the same percentage as among all engineering bachelor's degree-holders. Federal employment accounted for roughly 8 percent of both categories.

- Industry employed 91 percent of the recent master's degree recipients in chemical engineering; but only 76 percent of all chemical engineers with master's degrees.

Selected characteristics of 1985 and 1986 engineering doctorate recipients: 1987

Selected characteristic	Ph.D. chemical engineers	All Ph.D. engineers
Total employed	700	5,300
	Percent	
Sex		
Men	86	93
Women	14	7
Sector of employment		
Industry	57	53
Educational institutions	29	39
Federal Government	(1)	3
Other	14	5
Primary work activity		
Research and development	86	67
Teaching	14	18
Other	(1)	15

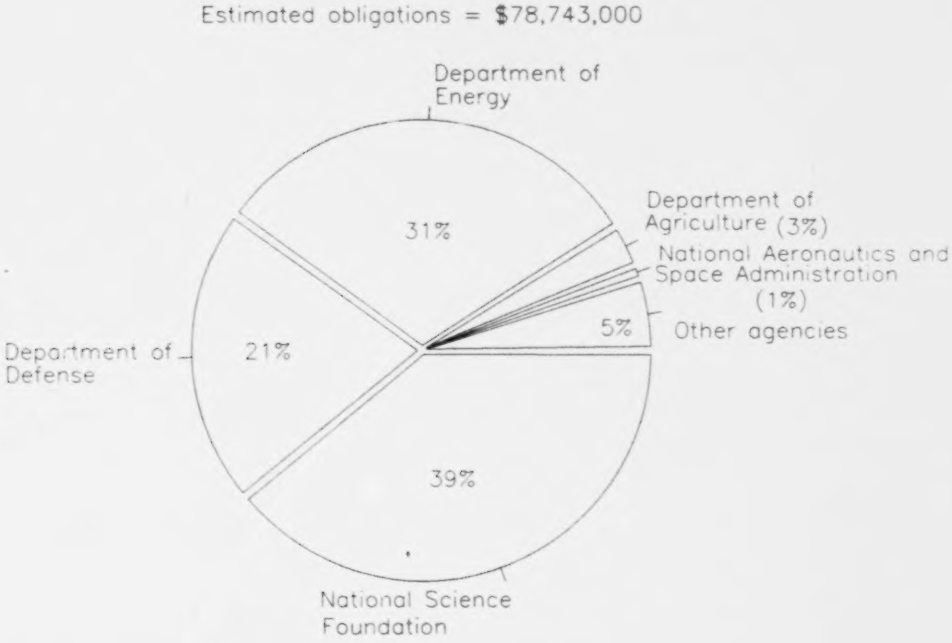
(1) Too few cases to estimate.
SOURCE: National Science Foundation, SRS; based on appendix tables 8, 11a, and 15a.

- In 1987, there were 700 recent (1985 and 1986) chemical engineering doctorates employed in the United States. Three-fifths of these were working in industry; most of the remainder were in academia. In comparison, industry hired almost one-half of all Ph.D. engineers and another two-fifths were in academia. The Federal Government hired 4 percent.

iv. funding

federal

Federal obligations for basic research in chemical engineering by agency: FY 1987 (est.)



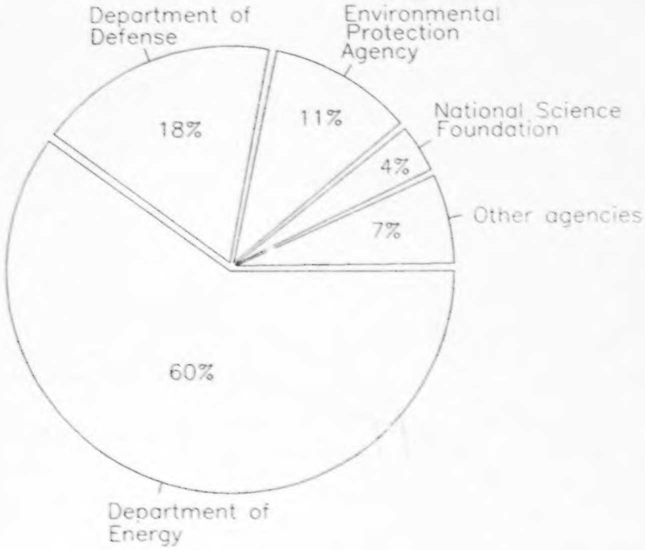
SOURCE: National Science Foundation, SRS; based on appendix table 31

- Federal obligations to basic research in chemical engineering were $79 million in fiscal year (FY) 1987 and represented about 7 percent of all engineering funding obligations. Since FY 1977, Federal funds for basic research in this field have increased at a faster annual rate than has overall engineering funding: 13 percent versus 12 percent.

- Three agencies account for about 91 percent of the basic research funding obligations in chemical engineering. In FY 1987, the National Science Foundation provided the largest Federal funding share, 39 percent or $31 million; followed by the Department of Energy, 31 percent or $24 million; and the Department of Defense, 21 percent or $17 million.

Federal obligations for applied research in chemical engineering by agency: FY 1987 (est.)

Estimated obligations = $170,074,000



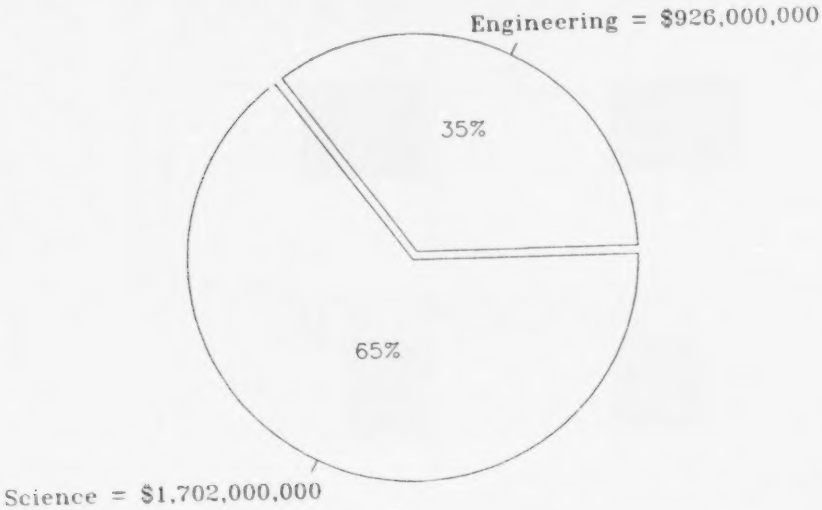
SOURCE: National Science Foundation, SRS; based on appendix table 33

- Applied research obligations for chemical engineering in FY 1987 were well over twice those for basic research. Federal funding obligations in this field were about $170 million in FY 1987, or about 6 percent of the overall support for applied research in engineering. Over the 1977-87 decade, Federal obligations more than kept pace with the growth in total funding for applied research in engineering. Since FY 1977, chemical engineering obligations in applied research have risen at an annual rate of 7.7 percent, versus 5.2 percent for total engineering funding.

- With obligations of $103 million, the Department of Energy accounted for 60 percent of the FY 1987 Federal funding for applied research in chemical engineering. NSF, the largest Federal supporter of basic research in chemical engineering has provided the smallest share: only 4 percent ($7 million) of the applied research obligations in this field.

industry

Funds for basic research in industry: 1985

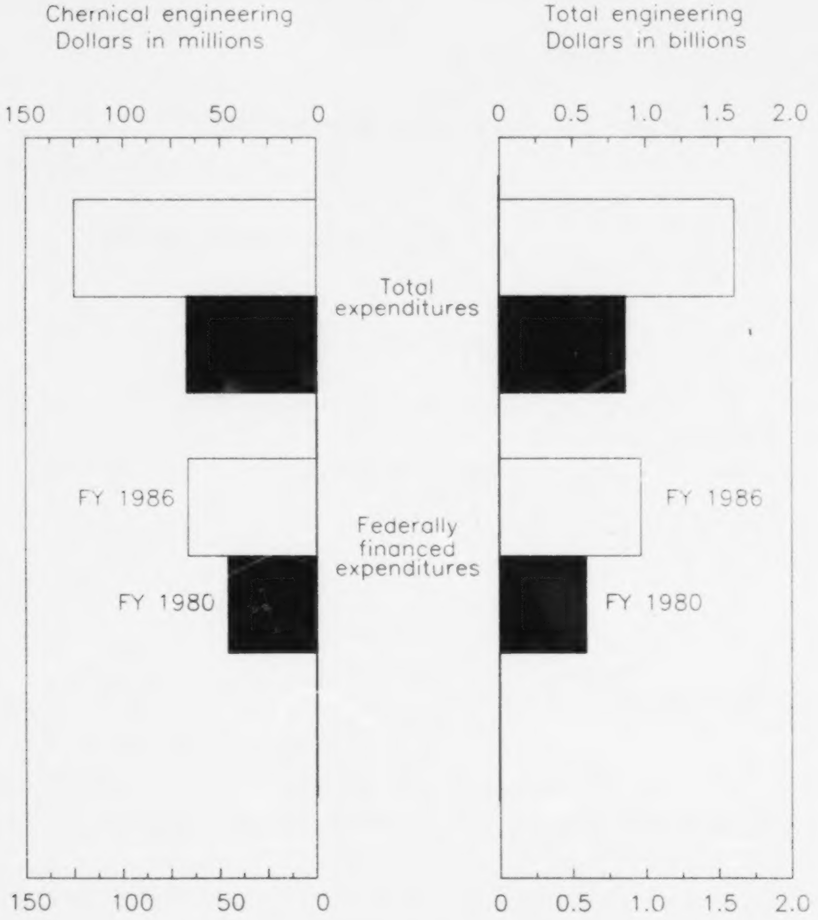


SOURCE: National Science Foundation, SRS; based on appendix table 34

- Although data on basic research funding in industry are not available for engineering subfields, they are available for engineering overall. In industry, company and Federal funding for basic research in engineering was $926 million in 1985, up from $233 million 1 decade earlier. Engineering received over one-third of total funding for science and engineering in industry, up from one-quarter in 1977.

universities and colleges

R&D expenditures at universities and colleges: FY's 1980 and 1986



SOURCE: National Science Foundation, SRS; based on appendix tables 37 and 38

- Total research and development (R&D) expenditures for chemical engineering at universities and colleges were $125 million in FY 1986; of this amount, $66 million was Federally financed. Chemical engineering garnered about 8 percent of all academic R&D expenditures in engineering. The yearly growth in R&D expenditures for both chemical engineering and engineering overall has been 9 percent since FY 1980 (the earliest year for which data are available).

- Two agencies contributed the bulk of Federal R&D monies for chemical engineering in FY 1986: the National Science Foundation (50 percent) and the Department of Defense (15 percent).

appendixes

a. technical notes
b. detailed statistical tables
c. taxonomy of computer specialists

appendix a

technical notes

The data contained in this report generally have been developed as part of ongoing programs of the Division of Science Resources Studies at the National Science Foundation (NSF). This section identifies and briefly describes these programs and their major data collection efforts. A more detailed explanation of the various data sources available from the Division may be obtained from the specific Study Groups mentioned below.

a. science and engineering (S/E) personnel

Population estimates of scientists and engineers are generated by the NSF's Scientific and Technical Personnel Data System (STPDS). These estimates provide information on the demographic, employment, and educational characteristics of scientists and engineers in the United States. Broadly speaking, a person is considered a scientist or engineer if at least two of the following criteria are met:

(1) Degree in science (including social science) or engineering

(2) Employed in an S/E occupation; and/or,

(3) Professional identification as a scientist or engineer based on total education and experience.

The STPDS is comprised of three subsystems, each designed to measure the characteristics of a particular subpopulation.

- **The Experienced Sample of Scientists and Engineers** examines the characteristics of individuals who were in the S/E population at the time of the 1980 Census of Population. The survey is conducted biennially for NSF by the Bureau of the Census. The 1986 survey was based on a sample of 64,000 individuals.

- **The Survey of Recent Science and Engineering Graduates** measures the magnitude and characteristics of those who earned degrees in science and engineering after the 1980 decennial census. The Institute of Survey Research at Temple University currently conducts this survey series for NSF. The 1986 survey focused on the graduating classes of 1982, 1984, and 1985 and was based on a sample of 35,000 individuals.

- **The Survey of Doctorate Recipients** concentrates on scientists and engineers granted doctorates in the United States over a 42-year period. The 1987 survey covered those individuals who received their doctorates between 1944 and 1986. The sample size for the 1987 survey was 59,300. This survey series has been conducted on a biennial basis for NSF by the Office of Science and Engineering Personnel, National Academy of Sciences, since 1973.

To produce national estimates, data from the first two surveys are integrated using a computer-based model. The Science and Engineering Tabulating Model (SETAB), developed for NSF by Mathematica Policy Research, Inc., was used to generate national estimates for 1982, 1984, and 1986.

definitions of selected variables

Field of science and engineering. Data on field of employment are derived from responses to questions asking the name of the specialty most closely related to the respondent's principal employment. The specialty is chosen by the respondents from a list provided in each questionnaire.

Work activities. Data on primary work activities of scientists and engineers are derived from responses to a series of questions on the survey instruments which ask individuals (a) to specify their primary and secondary work activities from a list of 10 to 15 choices, and (b) to provide a percentage distribution of their work time.

Sector of employment. Information on type of employer is also derived from survey responses. Respondents are asked to choose the category which best describes the type of organization of their principal employment.

statistical measures

Labor force participation rate. The labor force is defined as those employed and those seeking employment. The labor force participation rate is the ratio of those employed and those unemployed to the population.

S/E employment rate. The S/E employment rate measures the ratio of those holding jobs related to science or engineering to the total employment of scientists and engineers, which includes those holding nonscience or nonengineering-related jobs.

Unemployment rate. The unemployment rate shows the ratio of those who are unemployed but seeking employment to the total labor force.

S/E underemployment rate. The S/E underemployment rate shows the ratio of those who are working part-time but seeking full-time jobs or who are working in a non-S/E job when an S/E job would be preferred to total employment.

S/E underutilizaton rate. The S/E underutilization rate shows the proportion of those in the total labor force who are either unemployed but seeking employment, working part-time but seeking full-time jobs, or working in a non-S/E job when an S/E job would be preferred.

reliability of S/E estimates

Since the data on scientists and engineers are derived from sample surveys, the estimates are subject to both sampling and nonsampling errors. Information on the standard errors associated with these data is available upon request.

data source

For further information on the STPDS and its underlying surveys, please contact the Scientific and Technical Personnel Characteristics Studies Group, National Science Foundation, 1800 G St., N.W., Room L-611, Washington, D.C. 20550, (202) 634-4664.

b. industrial employment

Data on jobs in private industry are from the Occupational Employment Statistics Survey (OES). This survey is jointly sponsored by the Bureau of Labor Statistics and State employment agencies. The objective of the survey is to produce national, State, and local data on nonfarm wage and salary workers. NSF contributes to the support of this survey to ensure that information is collected on scientific, engineering, and technical occupations across all industries.

industry classification

Manufacturing and nonmanufacturing industries are classified according to the 1972 Standard Industrial Classification (SIC) codes. Reporting establishments are categorized on the basis of major product or activity for the previous calendar year. Each industry being surveyed receives a separate questionnaire in which detail is limited to those occupations with significant numbers of employees in that industry.

occupational classification

This survey collects data for approximately 60 scientific, engineering, and technical occupations based on two classification systems: (1) the Dictionary of Occupational Titles (DOT) and (2) the Standard Occupational Classification (SOC) system. Since the classification scheme for the DOT is detailed, this system is used to develop occupational categories and definitions. Summary categories are comparable to the broader categories used in the Census and the SOC.

survey cycles

The OES is conducted on a 3-year cycle. The first year concentrates on manufacturing industries; the second focuses on selected nonmanufacturing industries such as mining, construction, financial, and certain service industries; in the third year, data are collected on the trade and regulated industries in the nonmanufacturing sector.

Since this survey does not produce yearly estimates for all manufacturing and nonmanufacturing industries, NSF has designed a methodology for estimating total industrial jobs in science and engineering on a yearly basis.

data source

For further information on the OES, please contact the Industry Studies Group, National Science Foundation, 1800 G St., N.W., Room L-602, Washington, D.C. 20550, (202) 634-4648.

c. earned degrees

1. bachelor's- and master's-degree levels

Data on earned degrees in science and engineering at the bachelor's- and master's-degree levels are collected by the National Center for Education Statistics in the Department of Education. Degrees are subsequently classified in science and engineering by NSF. These data cover earned degrees conferred in the aggregate United States, which includes the 50 States, District of Columbia, and outlying areas. Degree data are compiled for the 12-month period from July through the following June.

2. doctorate level

Data on doctorates granted in science and engineering are from the Survey of Earned Doctorates, conducted for NSF by the National Academy of Sciences. These data cover all types of doctoral degrees with the exception of such first-professional degrees as the J.D. or M.D. Data are collected for the aggregate United States and cover the time period from July through the following June.

data source

For further information on these surveys, please contact the Science and Engineering Education Sector Studies Group, National Science Foundation, 1800 G St., N.W., Room L-611, Washington, D.C. 20550, (202) 634-4787.

d. graduate enrollment

National estimates of graduate enrollment are from the Annual Survey of Graduate Science and Engineering Students and Postdoctorates (GSESP), currently conducted for NSF by Quantum Research Corporation. The survey universe is composed of all institutions in the United States with departments or programs offering courses of study at the post-baccalaureate level in any S/E field. Included are medical schools and other specialized institutions offering first-professional doctorates in health-related fields. The most recent sample consisted of 618 graduate institutions, including all 325 doctorate-granting institutions and all 18 historically black colleges and universities with programs at the master's level.

data source

For further information on this survey and other data related to postsecondary S/E education, please contact the Science and Engineering Education Sector Studies Group, National Science Foundation, 1800 G St., N.W., Room L-611, Washington, D.C. 20550, (202) 634-4787.

e. federal funds for research and development

Data on Federal funding for research and development are collected as part of the Annual Survey of Federal Funds for Research and Development. This survey is now conducted for NSF by Moshman Associates, Inc. These data cover fiscal-year obligations or outlays of 34 Federal agencies and their subdivisions.

definitions of selected variables

Obligations represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when funds were appropriated and when future payment of money is required.

Outlays represent the amounts for checks issued and cash payments made during a given period, regardless of when the funds were appropriated.

Research is systematic study directed toward fuller scientific knowledge or understanding of the subject studied. Research is classified as either basic or applied according to the objective of the sponsoring agency.

Basic research has the objective of gaining fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without reference to specific process or product applications.

Applied research has the objective of gaining knowledge or understanding necessary for determining the means by which a recognized and specific need may be met.

Development is systematic use of the knowledge or understanding gained from research directed toward the production of useful materials, devices, systems, or methods; this includes the design and development of prototypes and processes but excludes quality control, routine product testing, and production.

Demonstration activities are included as part of research or development if they are intended to prove or test whether a technology or method works.

data source

For further information on this survey, please contact the Government Studies Group, National Science Foundation, 1800 G St., N.W., Room L-602, Washington, D.C. 20550, (202) 634-4636.

f. industrial r&d funding

Data on funding in industry are collected in the Annual Survey of Industrial Research and Development, conducted for NSF by the Bureau of the Census. The objective of this survey is to collect information related to industrial expenditures for research and development. Funds for research and development are defined as:

> Operating expenses incurred by a company in the conduct of research and development in its own laboratories or other company-owned or -operated facilities. Includes wages and salaries, materials and supplies consumed, property and other taxes, maintenance and repairs,

depreciation, and an appropriate share of overhead, but excludes capital expenditures.

The sample used in this survey is drawn every 5 years (the latest was drawn in 1981) and consists of approximately 12,700 companies in manufacturing and in nonmanufacturing industries known to conduct or finance research and development. Approximately 1,500 companies, defined as business organizations consisting of one or more establishments under common ownership or control, are surveyed each year. These companies either (1) spend more than $1 million on research and development annually, (2) have more than 500 employees, or (3) are included to obtain complete coverage of a particular industry.

data source

For further information on this survey, please contact the Industry Studies Group, National Science Foundation, 1800 G St., N.W., Room L-602, Washington, D.C. 20550, (202) 634-4648.

g. r&d funding at universities and colleges

1. federal support to universities and colleges

These data are collected as part of the Annual Survey of Federal Support to Universities, Colleges, and Selected Nonprofit Institutions currently conducted for NSF by Moshman Associates, Inc. This survey assembles information on Federal obligations to universities and colleges from the 15 agencies who provide virtually all R&D funding in science and engineering at higher education institutions. These agencies are the Agency for International Development, the Department of Commerce, the Department of Defense, the Department of Transportation, the Department of Education, the Environmental Protection Agency, the Department of Energy, the Department of Health and Human Services, the Department of Housing and Urban Development, the Department of the Interior, the Department of Labor, the National Aeronautics and Space Administration, the Nuclear Regulatory Commission, the Department of Agriculture, and the National Science Foundation.

definitions of selected variables

Universities and colleges are those institutions of higher education in the United States that offer at least one year of college-level study leading toward a degree. The universe of academic institutions for this survey is derived from the *Higher Education Directory*, published by Higher Education Publications, Inc., and from the NSF's Institutional Technical Reference File.

Academic science/engineering includes all obligations for the following activities: Research and development; R&D plant; facilities and equipment for instruction in sciences and engineering; fellowships, traineeships, and training grants; general support for science and engineering; and other S/E activities.

data source

For further information on this survey, please contact the Government Studies Group, National Science Foundation, 1800 G St., N.W., Room L-602, Washington, D.C. 20550, (202) 634-4636.

2. academic funding for research and development

Data on academic expenditures for research and development are collected annually in the Survey of Scientific and Engineering Expenditures at Universities and Colleges, conducted by NSF and currently processed by Quantum Research Corporation. These data represent S/E expenditures for separately budgeted research and development. The most recent survey covered a sample of 403 higher education institutions in the United States and outlying areas which grant graduate degrees in science and engineering and/or perform at least $50,000 in separately budgeted R&D expenditures. Included in the sample are all doctorate-granting institutions, all historically black colleges and universities with R&D expenditures, 17 federally funded research and development centers, and a random sample of all other institutions.

data source

For further information on this survey, please contact the Universities and Colleges Studies Group, National Science Foundation, 1800 G St., N.W., Room L-611, Washington, D.C. 20550, (202) 634-4673.

appendix b

detailed statistical tables

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2. Science and Engineering Education Sector Studies Group: Tables 24-29.
3. Government Studies Group: Tables 30-33 and 36.
4. Industry Studies Group: Tables 34 and 35.
5. Universities and Colleges Studies Group: Tables 37-39.

Table 1. Employment of scientists and engineers by field: 1976, 1978, 1980, 1982, 1984, and 1986

Field	1976	1978	1980	1982	1984	1986
Total, all fields	2,331,200	2,609,800	2,860,400	3,253,100	3,995,500	4,626,500
Total scientists	959,500	1,071,000	1,184,500	1,405,700	1,781,400	2,186,300
Physical scientists	188,900	208,300	215,200	227,400	254,100	288,400
Chemists	132,800	143,000	148,800	154,100	168,600	184,700
Physicists/astronomers	44,300	46,400	47,200	47,600	61,200	72,600
Other physical scientists	11,800	18,800	19,300	25,600	24,300	31,100
Mathematical scientists	48,600	53,700	64,300	79,400	100,400	131,000
Mathematicians	43,400	46,300	53,400	62,500	83,900	110,700
Statisticians	5,200	7,300	11,000	16,900	16,500	20,300
Computer specialists	119,000	177,000	207,800	299,000	436,600	562,600
Environmental scientists	54,800	68,900	77,600	87,200	98,100	111,300
Earth scientists	46,500	54,000	64,000	73,600	82,300	93,700
Oceanographers	4,400	7,300	5,100	3,400	3,200	4,200
Atmospheric scientists	3,800	7,600	8,500	10,300	12,600	13,500
Life scientists	213,500	244,100	287,500	337,100	353,300	411,800
Biological scientists	139,400	164,000	198,300	233,800	236,600	273,300
Agricultural scientists	40,700	49,600	59,300	73,800	88,700	103,300
Medical scientists	33,300	30,500	29,900	29,500	27,900	35,200
Psychologists	112,500	121,700	128,100	138,400	209,500	253,500
Social scientists	222,300	197,400	204,000	237,200	329,200	427,800
Economists	62,500	62,100	75,000	103,100	125,600	163,600
Sociologists/anthropologists	33,900	40,900	48,300	57,000	77,700	93,400
Other social scientists	125,900	94,400	80,700	77,200	125,900	170,800
Total engineers	1,371,700	1,538,800	1,675,900	1,847,300	2,214,100	2,440,100
Aeronautical/astronautical	56,800	62,000	69,500	80,800	97,200	110,500
Chemical	77,500	84,200	94,500	107,700	140,100	149,000
Civil	188,200	211,700	232,100	258,200	312,700	346,300
Electrical/electronics	283,000	341,500	383,100	437,700	500,700	574,500
Industrial	NA	NA	NA	113,100	131,700	137,700
Materials	NA	NA	NA	39,200	51,300	53,100
Mechanical	276,200	299,300	322,600	357,900	445,600	492,600
Mining	NA	NA	NA	14,200	16,500	17,300
Nuclear	NA	NA	NA	18,200	22,100	22,700
Petroleum	NA	NA	NA	27,700	33,300	30,800
Other engineers	490,000	540,100	574,100	392,500	463,000	505,600

NA = Not available

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 2. Scientists and engineers by field, sex, and employment status: 1976 and 1986

Field and sex	Employment status					
	Total population		Total employed		Employed in S/E	
	1976	1986	1976	1986	1976	1986
Total, all fields	2,530,100	4,971,900	2,331,200	4,626,500	2,122,100	3,919,900
Men	2,295,300	4,207,400	2,131,600	3,927,800	1,947,200	3,393,700
Women	234,800	764,400	199,700	698,600	174,900	526,200
Total scientists	1,048,400	2,337,000	959,500	2,186,300	843,800	1,676,400
Men	837,900	1,681,000	781,300	1,586,700	689,100	1,242,800
Women	210,600	656,000	178,200	599,600	154,700	433,600
Physical scientists	203,900	312,600	188,900	288,400	154,900	264,900
Men	185,400	269,100	172,700	250,100	143,600	229,500
Women	18,500	43,600	16,200	38,300	11,300	35,400
Chemists	142,500	202,200	132,800	184,700	108,000	168,900
Men	127,200	169,400	119,100	156,000	98,200	142,300
Women	15,300	32,800	13,700	28,800	9,800	26,600
Physicists/astronomers	48,400	77,200	44,300	72,600	37,000	68,300
Men	46,100	71,400	42,600	67,700	35,900	63,700
Women	2,300	5,700	1,700	4,900	1,100	4,600
Other physical scientists	13,000	33,300	11,800	31,100	10,000	27,700
Men	12,100	28,200	10,900	26,400	9,500	23,500
Women	900	5,100	800	4,700	400	4,200
Mathematical scientists	55,000	140,300	48,600	131,000	43,800	103,900
Men	40,700	102,600	37,100	97,100	33,700	78,900
Women	14,300	37,700	11,500	33,900	10,000	25,000
Mathemeticians	49,200	118,400	43,400	110,700	38,800	86,000
Men	36,900	86,200	33,700	81,500	30,500	65,100
Women	12,300	32,200	9,700	29,200	8,200	20,900
Statisticians	5,800	21,900	5,200	20,300	5,000	17,900
Men	3,800	16,400	3,400	15,600	3,200	13,800
Women	2,000	5,500	1,800	4,800	1,800	4,100
Computer specialists	125,900	575,800	119,000	562,600	116,000	437,200
Men	101,600	404,600	98,400	400,000	95,100	308,700
Women	24,300	171,200	20,600	162,500	20,900	128,400
Environmental scientists	58,300	123,200	54,800	111,300	46,600	97,300
Men	53,800	108,000	50,900	98,400	44,000	87,200
Women	4,500	15,200	3,900	12,900	2,600	10,100
Earth scientists	49,600	104,500	46,500	93,700	39,600	81,300
Men	45,400	90,700	42,900	82,200	37,300	72,400
Women	4,200	13,800	3,600	11,500	2,400	8,800
Oceanographers	4,600	4,500	4,400	4,200	3,500	4,100
Men	4,600	3,900	4,400	3,500	3,500	3,400
Women	(1)	700	(1)	700	(1)	700
Atmospheric scientists	4,100	14,200	3,800	13,500	3,400	12,000
Men	3,800	13,400	3,600	12,800	3,200	11,300
Women	300	800	300	700	200	700
Life scientists	230,700	452,100	213,500	411,800	198,200	340,500
Men	191,800	333,900	179,600	309,000	167,700	257,100
Women	38,900	118,200	33,900	102,800	30,500	83,300
Biological scientists	151,100	300,800	139,400	273,300	128,600	228,100
Men	124,000	215,800	115,300	199,600	106,200	168,900
Women	27,100	85,100	24,100	73,600	22,400	59,200
Agricultural scientists	44,300	113,600	40,700	103,300	39,100	80,900
Men	42,500	88,600	39,100	81,500	37,400	63,600
Women	1,800	25,000	1,600	21,800	1,600	17,300
Medical scientists	35,300	37,600	33,300	35,200	30,600	31,500
Men	25,300	29,500	25,100	27,900	24,100	24,600
Women	9,900	8,100	8,200	7,300	6,500	6,900
Psychologists	122,500	273,600	112,500	253,500	103,700	172,800
Men	81,800	149,100	76,900	138,400	71,600	99,500
Women	40,700	124,500	35,600	115,200	32,000	73,300
Social scientists	252,200	459,400	222,300	427,800	180,500	259,800
Men	182,800	313,700	165,700	293,800	133,200	181,800
Women	69,400	145,700	56,600	134,000	47,300	78,000
Economists	70,300	176,900	62,500	163,600	53,700	100,300
Men	60,500	142,900	54,600	131,700	46,300	80,000
Women	9,800	33,900	8,000	31,900	7,400	20,400
Sociologists/anthropologists	41,600	100,100	33,900	93,400	30,000	57,200
Men	26,100	50,700	22,500	48,600	19,700	33,700
Women	15,500	49,400	11,400	44,800	10,300	23,400
Other social scientists	140,300	182,400	125,900	170,800	96,900	102,300
Men	96,200	120,100	88,700	113,500	67,200	68,100
Women	44,200	62,300	37,200	57,300	29,600	34,200

Table 2 cont.

Field and sex	Employment status					
	Total population		Total employed		Employed in S/E	
	1976	1986	1976	1986	1976	1986
Total engineers	1,481,700	2,634,900	1,371,700	2,440,100	1,278,300	2,243,500
Men	1,457,500	2,526,400	1,350,300	2,341,100	1,258,100	2,150,900
Women	24,200	108,400	21,400	99,000	20,200	92,600
Aeronautical/astronautical	62,300	117,300	56,800	110,500	55,700	104,200
Men	61,500	112,800	56,400	106,200	55,100	100,300
Women	900	4,500	400	4,300	600	3,900
Chemical	83,900	171,700	77,500	149,000	76,400	131,500
Men	81,000	158,700	75,000	137,800	73,700	121,200
Women	3,000	13,000	2,500	11,200	2,800	10,300
Civil	201,800	381,400	188,200	346,300	182,800	319,100
Men	195,900	367,400	182,800	333,400	178,100	307,200
Women	6,000	14,100	5,400	12,900	4,800	11,900
Electrical/electronics	295,600	620,700	283,000	574,500	267,900	540,800
Men	293,200	599,400	281,400	555,500	266,500	523,200
Women	2,400	21,300	1,600	18,900	1,400	17,600
Industrial	NA	144,900	NA	137,700	NA	113,100
Men	NA	137,500	NA	130,600	NA	106,600
Women	NA	7,400	NA	7,100	NA	6,500
Materials	NA	57,400	NA	53,100	NA	46,800
Men	NA	54,100	NA	50,500	NA	44,500
Women	NA	3,300	NA	2,500	NA	2,300
Mechanical	297,800	547,800	276,200	492,600	272,800	453,700
Men	295,400	532,300	273,900	478,600	270,600	440,100
Women	2,500	15,500	2,300	14,000	2,200	13,600
Mining	NA	18,900	NA	17,300	NA	14,900
Men	NA	18,100	NA	16,600	NA	14,200
Women	NA	700	NA	700	NA	700
Nuclear	NA	23,500	NA	22,700	NA	22,200
Men	NA	22,600	NA	21,900	NA	21,400
Women	NA	900	NA	800	NA	800
Petroleum	NA	33,400	NA	30,800	NA	28,600
Men	NA	31,400	NA	28,900	NA	27,000
Women	NA	2,100	NA	1,800	NA	1,500
Other engineers	540,100	517,900	490,000	505,600	422,700	468,600
Men	530,600	492,200	480,900	481,000	414,200	445,200
Women	9,500	25,800	9,100	24,600	8,500	23,400

Table 2 cont.

Field and sex	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Total, all fields	82,100	72,700	116,800	272,700
Men	70,700	53,400	93,000	226,200
Women	11,300	19,400	23,800	46,500
Total scientists	36,500	41,900	52,400	108,700
Men	25,700	25,100	30,800	69,100
Women	10,700	16,800	21,600	39,600
Physical scientists	5,900	4,200	9,100	20,000
Men	5,200	3,000	7,500	16,000
Women	700	1,200	1,500	4,000
Chemists	3,500	2,900	6,200	14,600
Men	3,100	1,800	4,900	11,600
Women	400	1,100	1,200	3,000
Physicists/astronomers	1,400	800	2,600	3,800
Men	1,200	700	2,300	3,000
Women	200	100	300	800
Other physical scientists	900	600	300	1,600
Men	800	500	300	1,400
Women	100	100	(1)	300
Mathematical scientists	2,500	1,700	3,800	7,500
Men	1,900	800	1,700	4,700
Women	700	900	2,100	2,800
Mathematicians	2,400	1,200	3,400	6,500
Men	1,800	700	1,400	4,000
Women	600	500	1,900	2,500
Statisticians	100	500	400	1,100
Men	100	100	300	800
Women	(1)	400	200	300
Computer specialists	3,000	4,800	3,900	8,400
Men	1,800	2,200	1,400	2,400
Women	1,200	2,600	2,500	6,000
Environmental scientists	1,200	5,100	2,300	6,800
Men	1,000	4,000	1,800	5,600
Women	100	1,200	500	1,200
Earth scientists	1,100	4,900	2,000	5,900
Men	1,000	3,800	1,500	4,700
Women	100	1,100	500	1,200
Oceanographers	(1)	(1)	100	300
Men	(1)	(1)	100	300
Women	(1)	(1)	(1)	(1)
Atmospheric scientists	(1)	200	200	600
Men	(1)	200	200	500
Women	(1)	(1)	(1)	(1)
Life scientists	6,300	8,800	10,900	31,500
Men	4,900	5,200	7,300	19,700
Women	1,400	3,600	3,600	11,800
Biological scientists	4,200	6,000	7,400	21,500
Men	3,800	3,600	4,900	12,500
Women	500	2,400	2,500	9,000
Agricultural scientists	1,200	2,700	2,400	7,700
Men	1,100	1,500	2,200	5,600
Women	100	1,200	200	2,100
Medical scientists	800	200	1,100	2,300
Men	(1)	200	200	1,500
Women	800	(1)	900	800
Psychologists	5,700	6,600	4,300	13,500
Men	3,300	3,100	1,600	7,700
Women	2,400	3,600	2,700	5,800
Social scientists	11,900	10,600	18,100	21,000
Men	7,600	6,800	9,500	13,100
Women	4,200	3,700	8,600	7,900
Economists	1,800	5,300	6,000	8,000
Men	1,800	4,600	4,200	6,600
Women	(1)	600	1,800	1,400
Sociologists/anthropologists	5,500	2,100	2,200	4,700
Men	3,000	400	700	1,700
Women	2,500	1,600	1,600	3,000
Other social scientists	4,500	3,200	9,900	8,400
Men	2,900	1,700	4,600	4,800
Women	1,700	1,500	5,200	3,500

Table 2 cont.

Field and sex	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Total engineers	45,600	30,800	64,400	164,000
Men	45,000	28,200	62,200	157,100
Women	600	2,600	2,200	6,900
Aeronautical/astronautical	2,400	500	3,200	6,200
Men	2,400	400	2,700	6,200
Women	(1)	100	400	100
Chemical	1,800	4,000	4,600	18,600
Men	1,600	3,600	4,400	17,300
Women	200	500	200	1,300
Civil	5,300	5,900	8,400	29,300
Men	4,900	5,400	8,200	28,600
Women	400	500	100	700
Electrical/electronics	5,100	6,200	7,600	40,100
Men	5,100	6,000	6,700	37,900
Women	(1)	200	900	2,100
Industrial	NA	1,500	NA	5,700
Men	NA	1,400	NA	5,500
Women	NA	100	NA	200
Materials	NA	900	NA	3,400
Men	NA	400	NA	3,200
Women	NA	500	NA	200
Mechanical	12,300	6,700	9,300	48,400
Men	12,300	6,400	9,200	47,300
Women	(1)	400	100	1,100
Mining	NA	400	NA	1,200
Men	NA	400	NA	1,200
Women	NA	(1)	NA	(1)
Nuclear	NA	200	NA	500
Men	NA	200	NA	400
Women	NA	(1)	NA	100
Petroleum	NA	1,100	NA	1,600
Men	NA	1,000	NA	1,500
Women	NA	100	NA	100
Other engineers	18,700	3,300	31,300	9,000
Men	18,700	3,100	30,900	8,000
Women	(1)	200	400	900

(1) Too few cases to estimate
NA = Not available

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 3. Scientists and engineers by field, racial/ethnic group, and employment status: 1976 and 1986

Field and racial/ethnic group	Employment status: Total population 1976	Total population 1986	Total employed 1976	Total employed 1986	Employed in S/E 1976	Employed in S/E 1986
Total, all fields (1)	2,530,100	4,971,900	2,331,200	4,626,500	2,122,100	3,919,900
White	2,328,100	4,508,600	2,141,900	4,190,400	1,949,700	3,556,200
Black	42,000	122,900	38,100	114,900	34,900	87,900
Asian	109,900	239,700	106,600	226,800	98,500	199,000
Native American	NA	24,900	NA	23,600	NA	18,700
Hispanic (2)	NA	100,100	NA	93,400	NA	74,900
Total scientists	1,048,400	2,337,000	959,500	2,186,300	843,800	1,676,400
White	954,400	2,109,700	870,900	1,973,100	764,200	1,521,000
Black	24,000	78,900	21,400	73,700	19,400	50,600
Asian	49,700	100,100	48,500	94,000	43,100	72,300
Native American	NA	10,900	NA	10,300	NA	7,000
Hispanic (2)	NA	50,100	NA	46,100	NA	31,200
Physical scientists	203,900	312,600	188,900	288,400	154,900	264,900
White	186,100	283,800	172,400	261,800	141,200	240,400
Black	3,400	6,500	3,200	6,200	2,400	5,400
Asian	8,200	16,700	7,600	15,400	6,400	14,500
Native American	NA	1,300	NA	1,000	NA	1,000
Hispanic (2)	NA	5,200	NA	4,800	NA	4,600
Chemists	142,500	202,200	132,800	184,700	108,000	168,900
White	130,200	180,600	121,200	164,700	98,700	150,500
Black	2,800	5,100	2,800	4,800	2,100	4,200
Asian	7,100	12,600	6,800	11,700	5,600	11,100
Native American	NA	1,000	NA	800	NA	800
Hispanic (2)	NA	3,200	NA	2,900	NA	2,800
Physicists/astronomers	48,400	77,200	44,300	72,600	37,000	68,300
White	44,000	71,600	40,500	67,600	33,400	63,700
Black	500	900	300	900	200	800
Asian	700	3,400	600	3,000	600	2,800
Native American	NA	200	NA	200	NA	200
Hispanic (2)	NA	1,800	NA	1,700	NA	1,700
Other physical scientists	13,000	33,300	11,800	31,100	10,000	27,700
White	11,800	31,600	10,700	29,500	9,100	26,300
Black	100	500	100	500	100	400
Asian	400	700	200	700	200	700
Native American	NA	(3)	NA	(3)	NA	(3)
Hispanic (2)	NA	200	NA	200	NA	200
Mathematical scientists	55,000	140,300	48,600	131,000	43,800	103,900
White	50,400	124,200	44,200	115,500	39,400	91,300
Black	2,700	7,000	2,600	6,800	2,500	6,100
Asian	1,700	6,200	1,600	5,900	1,700	4,200
Native American	NA	200	NA	200	NA	100
Hispanic (2)	NA	3,200	NA	3,100	NA	2,600
Mathematicians	49,200	118,400	43,400	110,700	38,800	86,000
White	45,300	104,300	39,700	97,100	35,200	75,200
Black	2,500	6,400	2,300	6,200	2,200	5,500
Asian	1,200	5,100	1,200	4,800	1,200	3,200
Native American	NA	200	NA	200	NA	100
Hispanic (2)	NA	2,900	NA	2,800	NA	2,400
Statisticians	5,800	21,900	5,200	20,300	5,000	17,900
White	5,000	19,900	4,500	18,400	4,300	16,100
Black	300	600	200	600	300	600
Asian	500	1,100	400	1,100	400	1,000
Native American	NA	(3)	NA	(3)	NA	(3)
Hispanic (2)	NA	300	NA	300	NA	200
Computer specialists	125,900	575,800	119,000	562,600	116,000	437,200
White	116,800	508,500	110,700	497,100	108,000	388,200
Black	2,300	19,300	1,600	18,900	1,500	13,200
Asian	4,000	37,200	4,000	36,100	3,900	27,600
Native American	NA	2,200	NA	2,200	NA	1,100
Hispanic (2)	NA	9,700	NA	9,300	NA	6,100

Table 3 cont.

Field and racial/ethnic group	Employment status					
	Total population		Total employed		Employed in S/E	
	1976	1986	1976	1986	1976	1986
Environmental scientists	58,300	123,200	54,800	111,300	46,600	97,300
White	51,600	117,400	48,300	105,800	40,700	93,600
Black	2,100	1,000	2,000	1,000	1,800	400
Asian	3,400	2,300	3,200	2,100	2,900	1,900
Native American	NA	500	NA	400	NA	300
Hispanic (2)	NA	2,000	NA	1,800	NA	1,600
Earth scientists	49,600	104,500	46,500	93,700	39,600	81,300
White	45,300	99,900	42,400	89,300	35,800	78,600
Black	200	800	200	800	200	200
Asian	2,900	1,700	2,700	1,600	2,500	1,500
Native American	NA	300	NA	300	NA	200
Hispanic (2)	NA	1,700	NA	1,600	NA	1,400
Oceanographers	4,600	4,500	4,400	4,200	3,500	4,100
White	2,700	4,200	2,600	3,900	1,800	3,800
Black	1,800	100	1,800	(3)	1,600	(3)
Asian	100	(3)	100	(3)	100	(3)
Native American	NA	100	NA	100	NA	100
Hispanic (2)	NA	100	NA	100	NA	(3)
Atmospheric scientists	4,100	14,200	3,800	13,500	3,400	12,000
White	3,600	13,300	3,400	12,600	3,000	11,200
Black	(3)	100	(3)	100	(3)	100
Asian	400	500	400	500	400	400
Native American	NA	(3)	NA	(3)	NA	(3)
Hispanic (2)	NA	200	NA	200	NA	200
Life scientists	230,700	452,100	213,500	411,800	198,200	340,500
White	217,500	415,800	200,700	377,900	186,100	313,100
Black	4,900	9,300	4,900	8,800	4,700	7,100
Asian	5,600	16,400	5,300	15,000	5,400	12,900
Native American	NA	2,800	NA	2,800	NA	1,800
Hispanic (2)	NA	10,800	NA	9,900	NA	7,100
Biological scientists	151,100	300,800	139,400	273,300	128,600	228,100
White	142,400	275,300	131,000	249,300	120,700	209,000
Black	3,000	7,600	3,000	7,300	2,900	5,900
Asian	3,900	11,300	3,700	10,300	3,900	8,800
Native American	NA	1,400	NA	1,400	NA	800
Hispanic (2)	NA	7,900	NA	7,300	NA	5,300
Agricultural scientists	44,300	113,600	40,700	103,300	39,100	80,900
White	42,300	105,700	38,800	96,100	37,200	75,200
Black	500	1,200	500	1,100	400	900
Asian	900	3,100	900	2,900	900	2,200
Native American	NA	1,300	NA	1,300	NA	800
Hispanic (2)	NA	2,600	NA	2,300	NA	1,500
Medical scientists	35,300	37,600	33,300	35,200	30,600	31,500
White	32,700	34,800	30,900	32,500	28,200	29,000
Black	1,400	400	1,400	400	1,400	400
Asian	700	2,000	700	1,900	600	1,800
Native American	NA	100	NA	100	NA	100
Hispanic (2)	NA	300	NA	300	NA	300
Psychologists	122,500	273,600	112,500	253,500	103,700	172,800
White	114,100	252,300	105,100	234,100	97,100	161,800
Black	3,800	10,000	3,800	9,100	3,700	6,000
Asian	1,000	5,400	1,000	5,200	700	1,400
Native American	NA	2,100	NA	1,900	NA	1,800
Hispanic (2)	NA	6,400	NA	5,900	NA	2,700
Social scientists	252,200	459,400	222,300	427,800	180,500	259,800
White	217,800	407,700	189,400	380,800	151,600	232,600
Black	4,700	25,900	3,300	22,900	2,900	12,300
Asian	25,900	15,800	25,800	14,200	22,100	9,700
Native American	NA	1,800	NA	1,700	NA	800
Hispanic (2)	NA	12,700	NA	11,400	NA	6,600

Table 3 cont.

Field and racial/ethnic group	Employment status					
	Total population		Total employed		Employed in S/E	
	1976	1986	1976	1986	1976	1986
Economists	70,300	176,900	62,500	163,600	53,700	100,300
White	62,300	160,400	54,500	149,000	46,000	91,400
Black	800	5,600	800	5,200	700	3,500
Asian	6,700	7,600	6,700	6,100	6,600	3,500
Native American	NA	1,000	NA	1,000	NA	400
Hispanic (2)	NA	3,500	NA	3,400	NA	2,200
Sociologists/anthropologists	41,600	100,100	33,900	93,400	30,000	57,200
White	37,900	84,300	30,200	78,500	26,200	48,700
Black	500	8,500	500	7,800	400	4,100
Asian	1,100	4,500	1,100	4,300	1,200	3,200
Native American	NA	500	NA	400	NA	200
Hispanic (2)	NA	5,000	NA	5,000	NA	2,700
Other social scientists	140,300	182,400	125,900	170,800	96,900	102,300
White	117,700	162,900	104,700	153,300	79,500	92,500
Black	3,400	11,900	2,000	10,000	1,800	4,700
Asian	18,000	3,800	18,000	3,800	14,400	3,000
Native American	NA	300	NA	300	NA	200
Hispanic (2)	NA	4,200	NA	3,000	NA	1,600
Total engineers	1,481,700	2,634,900	1,371,700	2,440,100	1,278,300	2,243,500
White	1,373,700	2,398,900	1,271,000	2,217,300	1,185,500	2,035,200
Black	18,100	44,000	16,700	41,300	15,500	37,300
Asian	60,200	139,700	58,100	132,800	55,400	126,700
Native American	NA	14,000	NA	13,300	NA	11,700
Hispanic (2)	NA	50,000	NA	47,200	NA	43,700
Aeronautical/astronautical	62,300	117,300	56,800	110,500	55,700	104,200
White	59,700	107,400	54,100	100,800	52,900	94,900
Black	300	1,600	300	1,600	300	1,400
Asian	1,600	6,600	1,600	6,600	1,700	6,500
Native American	NA	400	NA	400	NA	400
Hispanic (2)	NA	1,500	NA	1,500	NA	1,400
Chemical	83,900	171,700	77,500	149,000	76,400	131,500
White	78,200	155,100	72,200	133,900	71,100	119,200
Black	1,500	2,100	1,500	2,000	1,500	900
Asian	2,900	11,000	2,400	10,100	2,400	9,200
Native American	NA	1,200	NA	900	NA	100
Hispanic (2)	NA	2,900	NA	2,700	NA	2,500
Civil	201,800	381,400	188,200	346,300	182,800	319,100
White	177,400	339,700	165,700	308,600	162,500	284,300
Black	1,700	6,400	1,600	5,200	1,800	4,800
Asian	15,100	26,600	14,800	24,500	14,800	23,300
Native American	NA	1,100	NA	1,100	NA	1,000
Hispanic (2)	NA	8,000	NA	7,300	NA	7,100
Electrical/electronics	295,600	620,700	283,000	574,500	267,900	540,800
White	274,800	555,100	262,500	512,100	248,800	481,800
Black	3,100	12,800	2,900	11,900	2,600	11,000
Asian	14,000	39,700	13,800	37,900	12,700	36,000
Native American	NA	3,500	NA	3,300	NA	3,000
Hispanic (2)	NA	13,100	NA	12,200	NA	11,400
Industrial	NA	144,900	NA	137,700	NA	113,100
White	NA	136,200	NA	129,100	NA	104,900
Black	NA	2,500	NA	2,500	NA	2,300
Asian	NA	3,800	NA	3,800	NA	3,700
Native American	NA	700	NA	700	NA	700
Hispanic (2)	NA	2,600	NA	2,500	NA	2,300
Materials	NA	57,400	NA	53,100	NA	46,800
White	NA	52,700	NA	48,600	NA	42,700
Black	NA	600	NA	600	NA	400
Asian	NA	3,200	NA	3,000	NA	2,900
Native American	NA	300	NA	300	NA	300
Hispanic (2)	NA	400	NA	400	NA	400

Table 3 cont.

Field and racial/ethnic group	Employment status					
	Total population		Total employed		Employed in S/E	
	1976	1986	1976	1986	1976	1986
Mechanical	297,800	547,800	276,200	492,600	272,800	453,700
White	277,600	505,600	258,700	452,600	255,300	416,000
Black	2,400	7,000	2,400	6,700	2,200	6,400
Asian	10,500	25,800	9,700	24,600	9,600	23,400
Native American	NA	2,900	NA	2,900	NA	2,600
Hispanic (2)	NA	9,500	NA	9,000	NA	7,900
Mining	NA	18,900	NA	17,300	NA	14,900
White	NA	18,300	NA	16,800	NA	14,400
Black	NA	100	NA	(3)	NA	(3)
Asian	NA	400	NA	400	NA	400
Native American	NA	(3)	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	100	NA	100
Nuclear	NA	23,500	NA	22,700	NA	22,200
White	NA	21,500	NA	20,800	NA	20,200
Black	NA	400	NA	400	NA	400
Asian	NA	1,500	NA	1,500	NA	1,500
Native American	NA	(3)	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	100	NA	100
Petroleum	NA	33,400	NA	30,800	NA	28,600
White	NA	30,900	NA	28,700	NA	26,600
Black	NA	300	NA	300	NA	300
Asian	NA	500	NA	400	NA	300
Native American	NA	700	NA	700	NA	700
Hispanic (2)	NA	800	NA	700	NA	700
Other engineers	540,100	517,900	490,000	505,600	422,700	468,600
White	506,100	476,400	457,800	465,300	394,900	430,100
Black	9,200	10,200	8,000	10,000	7,000	9,400
Asian	16,000	20,500	15,800	20,200	14,300	19,500
Native American	NA	3,100	NA	3,000	NA	2,800
Hispanic (2)	NA	10,800	NA	10,700	NA	9,900

Table 3 cont.

Field and racial/ethnic group	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Total, all fields (1)	82,100	72,700	116,800	272,700
White	73,300	61,700	112,900	256,500
Black	2,400	4,500	1,600	3,400
Asian	1,600	4,200	1,600	8,800
Native American	NA	300	NA	1,000
Hispanic (2)	NA	2,000	NA	4,800
Total scientists	36,500	41,900	52,400	108,700
White	33,500	35,800	50,000	100,800
Black	1,300	2,800	1,300	2,400
Asian	700	2,200	500	3,900
Native American	NA	200	NA	400
Hispanic (2)	NA	1,400	NA	2,600
Physical scientists	5,900	4,200	9,100	20,000
White	5,300	3,700	8,300	18,300
Black	200	200	(3)	100
Asian	400	200	100	1,200
Native American	NA	(3)	NA	300
Hispanic (2)	NA	200	NA	300
Chemists	3,500	2,900	6,200	14,600
White	3,300	2,400	5,700	13,500
Black	(3)	200	(3)	100
Asian	200	100	100	800
Native American	NA	(3)	NA	300
Hispanic (2)	NA	100	NA	300
Physicists/astronomers	1,400	800	2,600	3,600
White	1,200	700	2,300	3,300
Black	100	(3)	(3)	(3)
Asian	100	100	(3)	400
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	(3)
Other physical scientists	900	600	300	1,600
White	800	600	300	1,500
Black	(3)	(3)	(3)	100
Asian	100	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Mathematical scientists	2,500	1,700	3,800	7,500
White	2,500	1,500	3,600	7,200
Black	(3)	100	200	100
Asian	(3)	100	(3)	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	100
Mathematicians	2,400	1,200	3,400	6,500
White	2,400	1,000	3,200	6,200
Black	(3)	100	200	100
Asian	(3)	100	(3)	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	100
Statisticians	100	500	400	1,100
White	100	500	400	1,000
Black	(3)	(3)	(3)	(3)
Asian	(3)	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Computer specialists	3,000	4,800	3,900	8,400
White	2,400	4,200	3,800	7,200
Black	600	200	100	200
Asian	(3)	200	100	900
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	400

Table 3 cont.

Field and racial/ethnic group	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Environmental scientists	1,200	5,100	2,300	6,800
White	900	5,000	2,300	6,600
Black	(3)	(3)	(3)	(3)
Asian	200	100	(3)	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	100
Earth scientists	1,100	4,900	2,000	5,900
White	900	4,800	2,000	5,800
Black	(3)	(3)	(3)	(3)
Asian	200	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	(3)
Oceanographers	(3)	(3)	100	300
White	(3)	(3)	100	300
Black	(3)	(3)	(3)	(3)
Asian	(3)	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Atmospheric scientists	(3)	200	200	600
White	(3)	200	200	500
Black	(3)	(3)	(3)	(3)
Asian	(3)	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	100
Life scientists	6,300	8,800	10,900	31,500
White	6,200	8,000	10,600	29,900
Black	(3)	300	(3)	100
Asian	(3)	400	200	1,000
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	600
Biological scientists	4,200	6,000	7,400	21,500
White	4,200	5,500	7,200	20,400
Black	(3)	200	(3)	100
Asian	(3)	300	200	800
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	600
Agricultural scientists	1,200	2,700	2,400	7,700
White	1,200	2,300	2,300	7,300
Black	(3)	100	(3)	(3)
Asian	(3)	100	(3)	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	300
Medical scientists	800	200	1,100	2,300
White	800	100	1,100	2,200
Black	(3)	(3)	(3)	(3)
Asian	(3)	(3)	(3)	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Psychologists	5,700	6,600	4,300	13,500
White	4,700	5,600	4,300	12,600
Black	(3)	300	(3)	500
Asian	(3)	200	(3)	100
Native American	NA	200	NA	(3)
Hispanic (2)	NA	300	NA	200
Social scientists	11,900	10,600	18,100	21,000
White	11,500	7,800	17,000	19,000
Black	400	1,700	1,000	1,300
Asian	(3)	1,000	100	600
Native American	NA	(3)	NA	100
Hispanic (2)	NA	700	NA	600

Table 3 cont.

Field and racial/ethnic group	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Economists	1,800	5,300	6,000	8,000
White	1,800	4,000	6,000	7,400
Black	(3)	400	(3)	(3)
Asian	(3)	900	(3)	600
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	(3)
Sociologists/anthropologists	5,500	2,100	2,200	4,700
White	5,500	1,400	2,200	4,400
Black	(3)	500	(3)	200
Asian	(3)	100	100	(3)
Native American	NA	(3)	NA	100
Hispanic (2)	NA	(3)	NA	(3)
Other social scientists	4,500	3,200	9,900	8,400
White	4,100	2,400	8,900	7,300
Black	400	800	1,000	1,100
Asian	(3)	(3)	(3)	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	600	NA	600
Total engineers	45.600	30,800	64,400	164,000
White	39,800	25,900	63,000	155,700
Black	1,100	1,700	200	1,000
Asian	1,000	2,000	1,100	4,900
Native American	NA	100	NA	600
Hispanic (2)	NA	600	NA	2,200
Aeronautical/astronautical	2,400	500	3,200	6,200
White	2,400	500	3,200	6,100
Black	(3)	(3)	(3)	(3)
Asian	(3)	(3)	(3)	(3)
Native American	NA	(3)	NA	100
Hispanic (2)	NA	(3)	NA	(3)
Chemical	1,800	4,000	4,600	18,600
White	1,400	3,500	4,600	17,700
Black	(3)	(3)	(3)	(3)
Asian	400	400	(3)	500
Native American	NA	(3)	NA	300
Hispanic (2)	NA	200	NA	(3)
Civil	5,300	5,900	8,400	29,300
White	3,600	4,200	8,100	26,900
Black	(3)	1,100	(3)	100
Asian	(3)	300	300	1,800
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	100	NA	600
Electrical/electronics	5,100	6,200	7,600	40,100
White	5,100	5,200	7,200	37,800
Black	(3)	400	100	500
Asian	(3)	500	200	1,400
Native American	NA	(3)	NA	200
Hispanic (2)	NA	200	NA	700
Industrial	NA	1,500	NA	5,700
White	NA	1,400	NA	5,700
Black	NA	(3)	NA	(3)
Asian	NA	100	NA	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	100
Materials	NA	900	NA	3,400
White	NA	800	NA	3,300
Black	NA	(3)	NA	(3)
Asian	NA	100	NA	100
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)

Table 3 cont.

Field and racial/ethnic group	Employment status			
	Unemployed, seeking		Outside the labor force	
	1976	1986	1976	1986
Mechanical	12,300	6,700	9,300	48,400
White	10,200	6,200	8,700	46,800
Black	(3)	100	(3)	200
Asian	200	500	700	700
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	500
Mining	NA	400	NA	1,200
White	NA	400	NA	1,100
Black	NA	(3)	NA	100
Asian	NA	(3)	NA	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Nuclear	NA	200	NA	500
White	NA	200	NA	500
Black	NA	(3)	NA	(3)
Asian	NA	(3)	NA	(3)
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	(3)
Petroleum	NA	1,100	NA	1,600
White	NA	900	NA	1,400
Black	NA	(3)	NA	(3)
Asian	NA	(3)	NA	100
Native American	NA	(3)	NA	100
Hispanic (2)	NA	(3)	NA	100
Other engineers	18,700	3,300	31,300	9,000
White	17,100	2,600	31,300	8,500
Black	1,100	(3)	100	100
Asian	300	100	(3)	200
Native American	NA	(3)	NA	(3)
Hispanic (2)	NA	(3)	NA	100

(1) Detail will not add to total because
  a) racial and ethnic groups are not mutually exclusive and
  b) total includes other and no report
(2) Includes members of all racial groups
(3) Too few cases to estimate
NA - Not available

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 4. Employed doctoral scientists and engineers by field: 1977, 1979, 1981, 1983, 1985 and 1987

Field	1977	1979	1981	1983	1985	1987
Total, all fields	285,100	314,300	344,000	369,300	400,400	419,100
Total scientists	240,000	263,900	286,900	307,800	334,500	351,400
Physical scientists	57,500	60,200	63,100	64,000	67,500	68,600
Chemists	37,400	39,700	41,900	41,300	43,700	44,100
Physicists/astronomers	20,100	20,600	21,200	22,700	23,700	24,500
Mathematical scientists	14,600	15,300	15,600	16,400	16,800	16,700
Mathematicans	12,800	12,800	13,000	13,600	13,900	13,900
Statisticians	1,800	2,400	2,500	2,800	2,800	2,800
Computer specialists	5,800	6,700	9,100	12,200	15,000	18,600
Environmental scientists	13,000	14,600	15,900	16,500	17,300	17,800
Earth scientists	9,700	11,100	12,000	12,500	13,200	13,600
Oceanographers	1,600	1,700	1,800	1,700	2,000	2,000
Atmospheric scientists	1,700	1,800	2,100	2,200	2,100	2,200
Life scientists	70,500	78,900	84,900	92,800	101,800	107,400
Biological scientists	42,100	45,600	49,600	55,200	59,900	62,000
Agricultural scientists	12,100	12,800	13,500	14,500	15,500	15,800
Medical scientists	16,400	20,500	21,800	23,100	26,500	29,600
Psychologists	33,700	37,800	42,800	46,600	52,200	56,400
Social scientists	44,900	50,500	55,500	59,300	64,000	65,900
Economists	13,000	14,000	16,000	17,000	17,900	17,800
Sociologists/anthropologists	9,500	10,200	11,000	12,100	12,700	12,900
Other social scientists	22,500	26,300	28,500	30,300	33,400	35,100
Total engineers	45,100	50,300	57,000	61,500	65,900	67,800
Aeronautical/astronautical	2,000	2,400	2,500	3,700	3,800	5,000
Chemical	5,600	6,200	7,100	7,000	7,100	6,900
Civil	4,100	5,200	6,100	5,300	6,400	6,500
Electrical/electronics	8,300	8,600	10,600	12,700	14,300	12,600
Materials science	5,200	5,700	6,100	7,400	7,300	8,100
Mechanical	4,600	5,200	5,400	5,700	6,600	6,700
Nuclear	1,800	2,300	2,100	2,300	2,400	2,200
Systems design	3,600	4,900	5,300	3,900	3,700	3,900
Other engineers	9,900	9,900	11,800	13,600	14,300	15,800

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 5. Doctoral scientists and engineers by field, sex, and employment status: 1977 and 1987

Field and sex	Employment status									
	Total population		Total employed		Employed in S/E		Unemployed, seeking		Outside the labor force	
	1977	1987	1977	1987	1977	1987	1977	1987	1977	1987
Total, all fields	304,100	451,400	285,100	419,100	261,900	377,700	3,300	4,600	15,700	27,800
Men	272,300	378,000	257,500	352,400	236,900	319,300	2,300	3,200	12,500	22,400
Women	31,800	73,400	27,600	66,700	25,100	58,400	1,000	1,400	3,200	5,300
Total scientists	257,500	380,300	240,000	351,400	219,500	314,800	3,100	4,100	14,400	24,800
Men	226,100	308,700	212,700	286,300	194,700	258,000	2,100	2,800	11,300	19,600
Women	31,500	71,600	27,300	65,000	24,800	56,800	1,000	1,400	3,200	5,300
Physical scientists	62,200	75,800	57,500	68,600	51,300	62,100	800	1,000	3,900	6,200
Men	58,600	69,500	54,600	63,200	48,800	57,200	600	800	3,400	5,500
Women	3,600	6,300	2,900	5,500	2,500	4,900	200	200	500	600
Chemists	40,900	49,400	37,400	44,100	33,300	39,900	500	700	2,900	4,600
Men	37,900	44,300	35,000	39,700	31,300	36,000	400	600	2,500	4,000
Women	3,000	5,100	2,400	4,500	2,000	4,000	100	100	400	500
Physicists/astronomers	21,400	26,400	20,100	24,500	18,000	22,200	300	200	1,000	1,600
Men	20,700	25,200	19,600	23,500	17,500	21,300	200	200	900	1,500
Women	700	1,100	600	1,000	500	900	(1)	(1)	100	100
Mathematical scientists	15,400	17,800	14,600	16,700	13,600	15,000	200	200	600	900
Men	14,200	16,000	13,600	15,100	12,600	13,500	100	100	500	800
Women	1,200	1,800	1,000	1,600	1,000	1,500	(1)	(1)	100	200
Mathematicans	13,600	14,800	12,800	13,900	11,900	12,300	200	100	600	800
Men	12,500	13,300	11,900	12,600	11,100	11,100	100	100	500	600
Women	1,100	1,500	900	1,300	900	1,200	(1)	(1)	100	100
Statisticians	1,800	3,000	1,800	2,800	1,700	2,700	(1)	(1)	(1)	200
Men	1,700	2,600	1,600	2,500	1,600	2,400	(1)	(1)	(1)	100
Women	100	400	100	300	100	300	(1)	(1)	(1)	(1)
Computer specialists	5,800	18,600	5,800	18,600	5,700	18,400	(1)	(1)	100	(1)
Men	5,600	16,700	5,500	16,700	5,500	16,500	(1)	(1)	100	(1)
Women	200	1,900	200	1,900	200	1,900	(1)	(1)	(1)	(1)
Environmental scientists	13,600	19,000	13,000	17,800	12,600	17,000	100	200	400	1,000
Men	13,100	17,500	12,600	16,500	12,100	15,800	100	100	400	900
Women	500	1,400	400	1,300	400	1,200	(1)	(1)	(1)	100
Earth scientists	10,200	14,600	9,700	13,600	9,400	13,000	100	200	400	900
Men	9,800	13,500	9,400	12,600	9,100	12,100	100	100	300	800
Women	300	1,100	300	1,000	300	900	(1)	(1)	(1)	100
Oceanographers	1,600	2,100	1,600	2,000	1,500	1,900	(1)	(1)	(1)	100
Men	1,500	1,800	1,500	1,800	1,500	1,700	(1)	(1)	(1)	(1)
Women	100	200	100	200	100	200	(1)	(1)	(1)	(1)
Atmospheric scientists	1,800	2,200	1,700	2,200	1,700	2,100	(1)	(1)	100	(1)
Men	1,700	2,100	1,700	2.100	1,600	2,000	(1)	(1)	100	(1)
Women	100	100	100	100	100	100	(1)	(1)	(1)	(1)
Life scientists	76,800	117,500	70,500	107,400	66,800	100,200	900	1,500	5,300	8,600
Men	65,900	92,700	61,400	85,300	58,200	80,000	600	1,000	3,900	6,400
Women	10,800	24,800	9,100	22,100	8,600	20,200	300	500	1,400	2,200
Biological scientists	46,500	68,700	42,100	62,000	39,400	57,300	800	1,100	3,700	5,700
Men	38,300	53,200	35,400	48,500	33,200	45,000	500	700	2,400	4,100
Women	8,200	15,500	6,700	13,500	6,200	12,200	300	400	1,200	1,600
Agricultural scientists	12,800	17,800	12,100	15,800	11,500	14,900	100	300	700	1,800
Men	12,600	16,600	11,900	14,700	11,300	13,900	100	200	600	1,700
Women	300	1,200	200	1,100	200	1,000	(1)	(1)	(1)	100
Medical scientists	17,400	30,900	16,400	29,600	15,800	28,100	100	200	1,000	1,100
Men	15,000	22,900	14,200	22,100	13,700	21,100	100	100	800	700
Women	2 400	8,000	2,200	7,500	2,100	7,000	(1)	100	200	400
Psychologists	35,600	59,400	33,700	56,400	31,300	50,800	400	400	1,500	2,600
Men	27,200	39,100	26,100	37,300	24,300	33,600	200	200	900	1,600
Women	8,400	20,300	7,600	19,100	7,000	17,300	200	200	600	1,000

Table 5 cont.

Field and sex	Employment status: Total population		Total employed		Employed in S/E		Unemployed, seeking		Outside the labor force	
	1977	1987	1977	1987	1977	1987	1977	1987	1977	1987
Social scientists	48,100	72,300	44,900	65,900	38,100	51,200	600	900	2,600	5,500
Men	41,500	57,200	39,000	52,400	33,100	41,300	400	500	2,100	4,300
Women	6,600	15,100	6,000	13,500	5,000	9,900	200	400	500	1,200
Economists	14,000	19,600	13,000	17,800	11,000	14,800	100	100	900	1,600
Men	13,000	17,400	12,200	15,800	10,200	13,000	100	100	800	1,500
Women	900	2,200	800	2,000	700	1,700	(1)	(1)	100	200
Sociologists/anthropologists	10,300	14,700	9,500	12,900	8,600	9,800	300	400	600	1,400
Men	7,800	10,100	7,200	9,000	6,600	6,900	100	100	400	1,000
Women	2,500	4,600	2,300	3,900	2,000	2,800	100	200	200	500
Other social scientists	23,800	38,000	22,500	35,100	18,600	26,700	300	400	1,100	2,400
Men	20,700	29,700	19,600	27,500	16,300	21,400	200	300	900	1,900
Women	3,200	8,300	2,900	7,600	2,300	5,300	100	100	200	600
Total engineers	46,600	71,100	45,100	67,800	42,400	63,000	300	400	1,200	2,900
Men	46,200	69,300	44,800	66,000	42,200	61,300	300	400	1,200	2,900
Women	300	1,800	300	1,700	300	1,600	(1)	(1)	(1)	100
Aeronautical/astronautical	2,100	5,200	2,000	5,000	1,900	4,800	(1)	(1)	100	200
Men	2,100	5,100	2,000	4,900	1,800	4,700	(1)	(1)	100	200
Women	(1)	100	(1)	100	(1)	100	(1)	(1)	(1)	(1)
Chemical	5,900	7,600	5,600	6,900	5,100	6,200	100	100	200	700
Men	5,900	7,500	5,600	6,800	5,100	6,000	100	100	200	700
Women	(1)	100	(1)	100	(1)	100	(1)	(1)	(1)	(1)
Civil	4,100	6,900	4,100	6,500	3,800	5,900	(1)	(1)	(1)	400
Men	4,100	6,800	4,100	6,300	3,800	5,800	(1)	(1)	(1)	400
Women	(1)	200	(1)	200	(1)	100	(1)	(1)	(1)	(1)
Electrical/electronics	8,500	13,300	8,300	12,600	7,800	11,600	(1)	200	200	500
Men	8,500	12,900	8,200	12,300	7,800	11,300	(1)	200	200	500
Women	(1)	400	(1)	400	(1)	400	(1)	(1)	(1)	(1)
Materials science	5,400	8,400	5,200	8,100	5,000	7,700	(1)	(1)	100	300
Men	5,400	8,100	5,200	7,800	5,000	7,500	(1)	(1)	100	300
Women	100	300	(1)	200	(1)	200	(1)	(1)	(1)	(1)
Mechanical	4,800	7,000	4,600	6,700	4,300	6,300	(1)	100	200	300
Men	4,800	6,900	4,600	6,600	4,300	6,200	(1)	100	200	300
Women	(1)	100	(1)	100	(1)	100	(1)	(1)	(1)	(1)
Nuclear	1,800	2,200	1,800	2,200	1,700	2,100	(1)	(1)	(1)	(1)
Men	1,800	2,100	1,800	2,100	1,700	2,000	(1)	(1)	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Systems design	3,600	4,000	3,600	3,900	3,500	3,600	(1)	(1)	(1)	(1)
Men	3,600	3,800	3,500	3,800	3,400	3,400	(1)	(1)	(1)	(1)
Women	(1)	200	(1)	200	(1)	100	(1)	(1)	(1)	(1)
Other engineers	10,200	16,500	9,900	15,800	9,300	14,800	100	100	300	600
Men	10,200	16,100	9,800	15,400	9,300	14,400	100	100	300	600
Women	100	400	100	400	100	400	(1)	(1)	(1)	(1)

(1) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 6. Recent science and engineering bachelor's degree recipients by field, sex, and employment status: 1986
(1984 & 1985 graduates)

Field and sex	Employment status					Full-time graduate student (2)
	Total population (1)	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force	
Total, all fields	496,900	470,500	300,100	16,900	9,600	121,600
Men	314,800	300,400	209,900	10,400	4,000	76,900
Women	182,100	170,100	90,200	6,400	5,600	44,700
Total scientists	348,100	326,200	171,500	13,400	8,500	105,900
Men	186,000	175,200	98,300	7,300	3,400	63,700
Women	162,100	150,900	73,200	6,100	5,100	42,200
Physical scientists	20,200	19,200	13,000	400	600	12,500
Men	11,800	11,300	8,100	200	200	9,700
Women	8,400	7,900	4,900	200	400	2,700
Chemists	11,600	10,700	8,100	300	500	8,200
Men	5,700	5,300	4,200	100	200	6,100
Women	5,900	5,400	3,900	200	300	2,000
Physicists/astronomers	4,100	4,000	3,200	100	100	3,800
Men	3,500	3,400	2,700	100	(3)	3,400
Women	600	500	500	(3)	100	400
Other physical scientists	4,500	4,500	1,700	(3)	(3)	500
Men	2,500	2,500	1,200	(3)	(3)	200
Women	1,900	1,900	600	(3)	(3)	300
Mathematical scientists	26,700	25,700	18,900	500	500	5,200
Men	13,000	12,500	8,900	300	200	3,800
Women	13,700	13,200	10,000	200	300	1,400
Computer scientists	68,200	66,100	58,900	1,900	200	3,600
Men	42,100	40,700	36,100	1,200	100	2,600
Women	26,100	25,400	22,800	600	100	1,000
Environmental scientists	10,500	9,800	6,000	400	200	3,700
Men	7,800	7,300	4,400	400	200	2,700
Women	2,700	2,500	1,500	100	100	1,000
Life scientists	57,900	52,700	29,900	2,700	2,500	34,200
Men	28,600	26,500	16,100	1,100	1,000	22,100
Women	29,300	26,200	13,800	1,700	1,500	12,100
Biological scientists	39,400	35,000	17,900	2,300	2,100	30,800
Men	16,900	15,300	8,100	800	900	20,600
Women	22,500	19,800	9,800	1,500	1,200	10,200
Agricultural scientists	18,500	17,700	12,000	400	400	3,400
Men	11,700	11,300	8,000	300	100	1,500
Women	6,800	6,400	4,000	100	300	1,900
Psychologists	46,800	42,400	11,100	2,400	2,100	16,000
Men	14,600	13,200	3,700	1,200	200	5,500
Women	32,200	29,200	7,400	1,200	1,900	10,500
Social scientists	117,800	110,300	33,700	5,100	2,400	30,700
Men	68,100	63,800	20,900	2,900	1,500	17,200
Women	49,600	46,600	12,800	2,100	900	13,600
Economists	41,800	39,300	15,600	2,400	(3)	8,300
Men	29,900	28,200	10,700	1,700	(3)	6,600
Women	11,800	11,100	4,900	700	(3)	1,800
Sociologists/anthropologists	22,200	19,000	5,900	2,300	900	6,000
Men	9,200	8,000	2,700	900	300	2,100
Women	13,000	11,000	3,200	1,400	600	3,800
Other social scientists	53,800	52,000	12,200	300	1,500	16,500
Men	29,000	27,500	7,600	300	1,200	8,500
Women	24,800	24,400	4,700	(3)	300	8,000
Total engineers	148,800	144,300	128,600	3,500	1,100	15,700
Men	128,800	125,100	111,700	3,100	600	13,200
Women	20,000	19,200	16,900	400	500	2,400
Aeronautical/astronautical	4,700	4,600	3,900	100	(3)	400
Men	4,300	4,100	3,600	100	(3)	300
Women	400	400	300	(3)	(3)	100
Chemical	11,300	10,800	9,300	400	100	2,300
Men	8,100	7,800	6,700	300	(3)	1,900
Women	3,200	3,100	2,600	100	100	400
Civil	17,800	17,300	16,000	400	100	1,700
Men	15,400	15,000	13,800	400	(3)	1,500
Women	2,300	2,300	2,200	(3)	100	200
Electrical/electronics	45,500	44,100	40,600	900	400	4,100
Men	41,000	39,900	36,800	800	300	3,400
Women	4,500	4,200	3,800	100	200	700

Table 6 cont.

Field and sex	Employment status					Full-time graduate student (2)
	Total population (1)	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force	
Industrial	9,800	9,700	8,500	(3)	100	500
Men	7,600	7,600	6,700	(3)	(3)	400
Women	2,200	2,100	1,700	(3)	100	100
Materials	2,200	2,100	1,800	(3)	100	400
Men	1,600	1,500	1,300	(3)	100	300
Women	600	600	500	(3)	(3)	100
Mechanical	34,000	33,100	29,900	900	(3)	3,000
Men	30,600	29,800	26,800	800	(3)	2,700
Women	3,300	3,200	3,100	100	(3)	400
Mining	1,900	1,800	1,500	100	(3)	400
Men	1,600	1,500	1,300	100	(3)	300
Women	300	300	200	(3)	(3)	100
Nuclear	700	700	600	(3)	(3)	200
Men	600	600	600	(3)	(3)	200
Women	100	100	(3)	(3)	(3)	(3)
Petroleum	2,600	2,400	2,100	200	(3)	300
Men	2,200	2,000	1,800	200	(3)	300
Women	400	300	300	100	(3)	100
Other engineers	18,400	17,800	14,500	400	200	2,400
Men	15,700	15,200	12,300	400	100	2,100
Women	2,600	2,500	2,200	(3)	(3)	300

(1) Exclusive of full-time graduate students
(2) Not included in total population number
(3) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 7. Recent science and engineering master's degree recipients by field, sex, and employment status: 1986 (1984 & 1985 graduates)

Field and sex	Employment status					Full-time graduate student (2)
	Total population (1)	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force	
Total, all fields	90,300	86,500	72,900	1,900	1,900	24,800
Men	63,900	62,200	54,100	1,100	600	18,300
Women	26,400	24,300	18,800	800	1,300	6,500
Total scientists	59,000	55,900	44,000	1,500	1,600	18,300
Men	36,100	35,000	28,400	800	400	12,700
Women	22,800	21,000	15,600	700	1,200	5,600
Physical scientists	4,200	4,000	3,400	100	200	3,100
Men	3,000	2,900	2,600	(3)	(3)	2,600
Women	1,200	1,100	800	(3)	100	500
Chemists	2,100	2,000	1,800	(3)	(3)	1,000
Men	1,400	1,400	1,300	(3)	(3)	700
Women	700	600	500	(3)	(3)	300
Physicists/astronomers	1,200	1,100	1,000	(3)	100	1,900
Men	1,100	1,000	900	(3)	(3)	1,800
Women	200	100	100	(3)	(3)	100
Other physical scientists	900	800	600	(3)	(3)	100
Men	500	500	400	(3)	(3)	100
Women	400	300	200	(3)	(3)	(3)
Mathematical scientists	6,100	5,800	5,200	100	100	1,400
Men	3,900	3,800	3,400	100	(3)	1,000
Women	2,200	2,000	1,800	(3)	100	400
Computer scientists	16,200	15,900	14,300	100	300	1,500
Men	12,200	12,000	10,800	(3)	100	1,500
Women	4,000	3,900	3,500	(3)	100	(3)
Environmental scientists	3,600	3,300	3,000	200	100	1,100
Men	2,800	2,600	2,500	200	(3)	1,000
Women	800	700	600	(3)	(3)	200
Life scientists	10,900	10,200	8,200	400	300	4,900
Men	5,400	5,100	4,200	200	100	3,100
Women	5,500	5,100	4,000	200	200	1,800
Biological scientists	7,100	6,700	5,200	300	200	3,800
Men	3,000	2,800	2,200	100	(3)	2,300
Women	4,100	3,800	3,000	100	200	1,500
Agricultural scientists	3,800	3,500	3,000	200	100	1,100
Men	2,400	2,300	2,100	100	100	900
Women	1,400	1,200	1,000	100	100	300
Psychologists	4,100	3,800	2,500	200	100	2,000
Men	1,400	1,300	800	100	(3)	700
Women	2,700	2,500	1,700	100	100	1,300
Social scientists	14,000	12,900	7,200	500	600	4,300
Men	7,500	7,200	4,200	200	200	2,800
Women	6,400	5,800	3,100	300	400	1,500
Economists	3,600	3,300	1,900	100	200	1,300
Men	2,300	2,200	1,100	100	100	1,100
Women	1,300	1,100	800	100	100	200
Sociologists/anthropologists	2,800	2,500	1,000	100	100	1,600
Men	800	700	200	(3)	(3)	800
Women	2,000	1,800	800	100	100	800
Other social scientists	7,500	7,100	4,300	200	200	1,400
Men	4,400	4,300	2,900	100	(3)	1,000
Women	3,100	2,900	1,400	100	200	500
Total engineers	31,300	30,600	29,000	400	300	6,400
Men	27,800	27,300	25,700	300	200	5,600
Women	3,500	3,300	3,200	100	100	900
Aeronautical/astronautical	900	900	800	(3)	(3)	200
Men	800	800	700	(3)	(3)	200
Women	200	200	200	(3)	(3)	(3)
Chemical	2,400	2,200	2,100	100	(3)	700
Men	2,000	1,900	1,800	(3)	(3)	600
Women	400	300	300	(3)	(3)	200
Civil	4,800	4,600	4,400	(3)	100	700
Men	4,300	4,200	4,100	(3)	(3)	600
Women	500	400	400	(3)	(3)	100
Electrical/electronics	9,500	9,400	9,100	(3)	(3)	1,900
Men	8,600	8,500	8,200	(3)	(3)	1,700
Women	900	900	900	(3)	(3)	100

Table 7 cont.

Field and sex	Employment status					Full-time graduate student (2)
	Total population (1)	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force	
Industrial	1,600	1,500	1,300	(3)	(3)	200
Men	1,400	1,400	1,200	(3)	(3)	200
Women	100	100	100	(3)	(3)	100
Materials	900	900	800	(3)	(3)	500
Men	700	700	700	(3)	(3)	400
Women	200	200	200	(3)	(3)	100
Mechanical	4,900	4,800	4,600	100	(3)	1,100
Men	4,500	4,400	4,300	100	(3)	1,000
Women	400	400	400	(3)	(3)	100
Mining	300	300	300	(3)	(3)	100
Men	200	200	200	(3)	(3)	100
Women	(3)	(3)	(3)	(3)	(3)	(3)
Nuclear	500	500	500	(3)	(3)	100
Men	400	400	400	(3)	(3)	100
Women	(3)	(3)	(3)	(3)	(3)	(3)
Petroleum	400	300	300	(3)	(3)	100
Men	300	300	300	(3)	(3)	100
Women	(3)	(3)	(3)	(3)	(3)	(3)
Other engineers	5,400	5,100	4,600	100	100	800
Men	4,600	4,400	3,900	100	100	600
Women	800	700	700	(3)	(3)	200

(1) Exclusive of full-time graduate students
(2) Not included in total population number
(3) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 8. Recent science and engineering doctoral degree recipients by field, sex and employment status: 1987 (1985 & 1986 graduates)

Field and sex	Employment status				
	Total population	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force
Total, all fields	35,400	34,200	31,700	500	700
Men	25,100	24,400	23,000	300	400
Women	10,400	9,800	8,700	300	300
Total scientists	30,100	28,900	26,600	500	700
Men	20,100	19,500	18,300	300	400
Women	10,000	9,400	8,400	200	300
Physical scientists	5,200	5,100	4,900	100	100
Men	4,300	4,300	4,200	(1)	(1)
Women	900	800	700	(1)	(1)
Chemists	3,300	3,300	3,200	(1)	100
Men	2,700	2,600	2,600	(1)	(1)
Women	700	600	600	(1)	(1)
Physicists/astronomers	1,800	1,800	1,800	(1)	(1)
Men	1,600	1,600	1,600	(1)	(1)
Women	200	200	200	(1)	(1)
Mathematical scientists	1,200	1,200	1,100	(1)	(1)
Men	1,000	1,000	900	(1)	(1)
Women	200	200	200	(1)	(1)
Mathematicans	900	900	800	(1)	(1)
Men	800	800	600	(1)	(1)
Women	200	200	200	(1)	(1)
Statisticians	300	300	300	(1)	(1)
Men	300	300	300	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Computer specialists	1,300	1,300	1,200	(1)	(1)
Men	1,100	1,100	1,100	(1)	(1)
Women	100	100	100	(1)	(1)
Environmental scientists	1,200	1,200	1,100	(1)	(1)
Men	1,000	1,000	900	(1)	(1)
Women	200	200	200	(1)	(1)
Earth scientists	800	800	800	(1)	(1)
Men	700	600	600	(1)	(1)
Women	200	200	100	(1)	(1)
Oceanographers	200	200	200	(1)	(1)
Men	200	200	200	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Atmospheric scientists	100	100	100	(1)	(1)
Men	100	100	100	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Life scientists	10,000	9,500	8,900	200	300
Men	6,500	6,100	5,800	200	200
Women	3,500	3,300	3,100	100	100
Biological scientists	6,200	5,800	5,500	200	200
Men	4,200	3,900	3,700	100	100
Women	2,000	1,900	1,800	(1)	100
Agricultural scientists	1,300	1,200	1,200	(1)	(1)
Men	1,000	1,000	1,000	(1)	(1)
Women	200	200	200	(1)	(1)
Medical scientists	2,500	2,400	2,200	(1)	100
Men	1,200	1,200	1,100	(1)	100
Women	1,300	1,200	1,100	(1)	(1)
Psychologists	5,700	5,500	5,100	100	100
Men	2,800	2,700	2,600	(1)	100
Women	2,900	2,800	2,600	(1)	100

Table 8 cont.

Field and sex	Employment status				
	Total population	Total employed	Employed in S/E	Unemployed, seeking	Outside the labor force
Social scientists	5,500	5,300	4,200	100	100
Men	3,400	3,300	2,800	(1)	100
Women	2,100	2,000	1,400	100	100
Economists	1,700	1,600	1,500	(1)	(1)
Men	1,300	1,300	1,100	(1)	(1)
Women	400	400	400	(1)	(1)
Sociologists/anthropologists	1,000	800	500	100	(1)
Men	400	400	200	(1)	(1)
Women	500	400	300	100	(1)
Other social scientists	2,900	2,900	2,100	(1)	(1)
Men	1,700	1,700	1,400	(1)	(1)
Women	1,300	1,200	700	(1)	(1)
Total engineers	5,300	5,300	5,000	(1)	(1)
Men	5,000	4,900	4,700	(1)	(1)
Women	400	300	300	(1)	(1)
Aeronautical/astronautical	300	300	300	(1)	(1)
Men	300	300	300	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Chemical	700	700	700	(1)	(1)
Men	600	600	600	(1)	(1)
Women	100	100	100	(1)	(1)
Civil	400	400	400	(1)	(1)
Men	400	400	400	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Electrical/electronics	1,200	1,200	1,100	(1)	(1)
Men	1,100	1,100	1,100	(1)	(1)
Women	100	100	(1)	(1)	(1)
Materials science	700	700	700	(1)	(1)
Men	600	600	600	(1)	(1)
Women	100	100	100	(1)	(1)
Mechanical	500	500	500	(1)	(1)
Men	500	500	400	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Nuclear	100	100	100	(1)	(1)
Men	100	100	100	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Systems design	300	300	300	(1)	(1)
Men	300	300	300	(1)	(1)
Women	(1)	(1)	(1)	(1)	(1)
Other engineers	1,200	1,100	1,100	(1)	(1)
Men	1,100	1,100	1,000	(1)	(1)
Women	100	100	100	(1)	(1)

(1) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 9. Employed scientists and engineers by field, sex, sector of employment: 1976 and 1986

Field and sex	Sector of employment							
	Total		Industry		Educational institutions		Federal Government	
	1976	1986	1976	1986	1976	1986	1976	1986
Total, all fields	2,331,200	4,626,500	1,456,500	3,134,500	287,600	627,000	219,200	354,100
Men	2,131,600	3,927,800	1,385,100	2,741,700	232,400	479,200	200,600	310,400
Women	199,700	698,600	71,400	392,800	55,200	147,800	18,500	43,700
Total scientists	959,500	2,186,300	430,300	1,193,700	248,000	526,200	110,700	167,900
Men	781,300	1,586,700	373,200	876,200	194,000	385,000	93,600	131,800
Women	178,200	599,600	57,000	317,500	54,000	141,100	17,000	36,100
Physical scientists	188,900	288,400	105,400	163,700	39,100	71,100	22,400	29,700
Men	172,700	250,100	97,200	142,700	34,400	61,500	20,900	27,000
Women	16,200	38,300	8,200	20,900	4,700	9,600	1,500	2,700
Chemists	132,800	184,700	87,200	122,900	22,700	36,100	10,700	12,700
Men	119,100	156,000	79,600	104,900	19,300	30,200	9,500	10,800
Women	13,700	28,800	7,700	17,900	3,500	5,900	1,200	1,900
Physicists/astronomers	44,300	72,600	13,100	26,600	15,000	27,200	8,900	11,700
Men	42,600	67,700	12,900	25,100	13,900	25,000	8,600	11,400
Women	1,700	4,900	200	1,500	1,200	2,200	200	300
Other physical scientists	11,800	31,100	5,100	14,200	1,400	7,700	2,800	5,300
Men	10,900	26,400	4,800	12,700	1,300	6,300	2,800	4,700
Women	800	4,700	300	1,500	100	1,400	100	600
Mathematical scientists	48,600	131,000	15,000	54,700	21,100	58,700	9,000	11,100
Men	37,100	97,100	12,000	41,900	15,700	43,400	7,200	8,100
Women	11,500	33,900	2,900	12,800	5,500	15,300	1,800	3,000
Mathematicians	43,400	110,700	13,900	46,300	20,000	51,900	7,000	8,200
Men	33,700	81,500	11,500	35,200	14,900	37,700	5,500	6,200
Women	9,700	29,200	2,400	11,100	5,100	14,200	1,500	1,900
Statisticians	5,200	20,300	1,100	8,500	1,200	6,800	2,100	2,900
Men	3,400	15,600	600	6,700	800	5,700	1,700	1,800
Women	1,800	4,800	500	1,700	400	1,200	400	1,100
Computer specialists	119,000	562,600	86,800	439,700	6,900	37,700	9,300	38,500
Men	98,400	400,000	72,300	315,700	5,800	24,900	7,700	27,000
Women	20,600	162,500	14,500	124,000	1,100	12,800	1,600	11,500
Environmental scientists	54,800	111,300	30,900	65,100	6,100	18,200	10,100	17,600
Men	50,900	98,400	28,900	58,400	5,200	15,800	9,300	15,500
Women	3,900	12,900	2,000	6,800	900	2,400	800	2,200
Earth scientists	46,500	93,700	27,000	60,200	4,600	14,400	7,800	11,000
Men	42,900	82,200	25,100	54,000	3,900	12,200	7,000	9,200
Women	3,600	11,500	1,900	6,200	600	2,200	700	1,800
Oceanographers	4,400	4,200	3,200	900	500	1,800	500	1,000
Men	4,400	3,500	3,200	500	500	1,700	500	1,000
Women	(2)	700	(2)	400	(2)	100	(2)	(2)
Atmospheric scientists	3,800	13,500	600	4,000	1,000	1,900	1,800	5,600
Men	3,600	12,800	600	3,900	800	1,800	1,800	5,300
Women	300	700	(2)	100	200	100	(2)	300
Life scientists	213,500	411,800	71,500	153,100	63,300	147,900	39,300	42,400
Men	179,600	309,000	63,600	117,600	50,800	111,000	34,200	33,100
Women	33,900	102,800	7,900	35,500	12,600	37,000	5,200	9,300
Biological scientists	139,400	273,300	37,600	92,100	44,700	104,000	30,700	32,300
Men	115,300	199,600	33,000	69,800	34,900	75,100	26,000	25,700
Women	24,100	73,600	4,600	22,300	9,800	28,900	4,700	6,600
Agricultural scientists	40,700	103,300	19,100	53,400	9,400	25,700	5,800	9,000
Men	39,100	81,500	18,400	41,600	9,100	21,500	5,600	6,600
Women	1,600	21,800	700	11,800	400	4,200	200	2,400
Medical scientists	33,300	35,200	14,800	7,600	9,300	18,300	2,900	1,100
Men	25,100	27,900	12,200	6,200	6,900	14,400	2,600	800
Women	8,200	7,300	2,600	1,400	2,400	3,900	300	300
Psychologists	112,500	253,500	26,400	101,800	43,800	79,400	5,200	6,900
Men	76,900	138,400	20,400	51,300	29,900	47,900	3,100	3,700
Women	35,600	115,200	6,000	50,500	13,900	31,500	2,100	3,200
Social scientists	222,300	427,800	94,400	215,500	67,700	113,100	15,300	21,800
Men	165,700	293,800	78,800	148,600	52,300	80,600	11,200	17,500
Women	56,600	134,000	15,600	66,900	15,500	32,500	4,000	4,200

Table 9 cont.

Field and sex	Sector of employment							
	Total		Industry		Educational institutions		Federal Government	
	1976	1986	1976	1986	1976	1986	1976	1986
Economists	62,500	163,600	34,800	102,200	13,000	33,600	8,300	12,800
Men	54,600	131,700	30,400	80,500	12,000	29,600	6,600	10,500
Women	8,000	31,900	4,400	21,800	1,000	4,000	1,600	2,300
Sociologists/anthropologists	33,900	93,400	10,900	34,200	16,300	34,100	1,000	2,300
Men	22,500	48,600	7,200	16,100	11,500	18,700	500	1,900
Women	11,400	44,800	3,700	18,100	4,700	15,400	500	400
Other social scientists	125,900	170,800	48,700	79,100	38,400	45,500	6,000	6,700
Men	88,700	113,500	41,200	52,000	28,700	32,400	4,100	5,100
Women	37,200	57,300	7,500	27,100	9,700	13,200	1,900	1,600
Total engineers	1,371,700	2,440,100	1,026,200	1,940,800	39,600	100,900	108,500	186,200
Men	1,350,300	2,341,100	1,011,900	1,865,500	38,400	94,100	107,000	178,500
Women	21,400	99,000	14,300	75,300	1,200	6,700	1,500	7,600
Aeronautical/astronautical	56,800	110,500	40,300	80,900	1,800	3,800	11,100	17,700
Men	56,400	106,200	39,900	78,500	1,800	3,600	11,100	16,800
Women	400	4,300	400	2,300	(2)	200	(2)	900
Chemical	77,500	149,000	69,200	128,300	900	7,200	2,700	6,700
Men	75,000	137,800	67,100	118,800	900	6,500	2,600	6,300
Women	2,500	11,200	2,100	9,500	(2)	800	100	400
Civil	188,200	346,300	88,800	215,000	5,500	10,500	21,300	32,800
Men	182,800	333,400	86,900	208,200	5,200	8,900	20,900	31,400
Women	5,400	12,900	1,900	6,800	300	1,700	400	1,400
Electrical/electronics	283,000	574,500	223,500	463,300	10,800	27,200	28,300	53,700
Men	281,400	555,500	222,400	448,100	10,700	25,900	28,300	52,300
Women	1,600	18,900	1,100	15,100	100	1,300	(2)	1,400
Industrial	NA	137,700	NA	121,100	NA	4,700	NA	6,000
Men	NA	130,600	NA	114,800	NA	4,500	NA	5,600
Women	NA	7,100	NA	6,300	NA	200	NA	400
Materials	NA	53,100	NA	45,200	NA	4,000	NA	2,200
Men	NA	50,500	NA	43,100	NA	3,900	NA	1,900
Women	NA	2,500	NA	2,100	NA	100	NA	200
Mechanical	276,200	492,600	230,400	426,100	8,700	18,300	15,400	30,000
Men	273,900	478,600	228,400	414,500	8,600	17,400	15,100	29,200
Women	2,300	14,000	1,900	11,600	100	900	300	800
Mining	NA	17,300	NA	14,400	NA	1,000	NA	1,100
Men	NA	16,600	NA	14,000	NA	900	NA	1,100
Women	NA	700	NA	500	NA	100	NA	100
Nuclear	NA	22,700	NA	14,100	NA	1,300	NA	5,100
Men	NA	21,900	NA	13,400	NA	1,200	NA	5,000
Women	NA	800	NA	600	NA	(2)	NA	100
Petroleum	NA	30,800	NA	28,000	NA	500	NA	800
Men	NA	28,900	NA	26,400	NA	400	NA	800
Women	NA	1,800	NA	1,600	NA	100	NA	(2)
Other engineers	490,000	505,600	374,000	404,500	11,900	22,400	29,600	30,100
Men	480,900	481,000	367,100	385,700	11,200	21,000	29,000	28,200
Women	9,100	24,600	6,900	18,800	600	1,400	700	1,800

Table 9 cont.

Field and sex	Sector of employment					
	State/local government		Nonprofit organizations		Other (1)	
	1976	1986	1976	1986	1976	1986
Total, all fields	134,500	233,300	87,000	165,200	146,400	112,300
Men	117,300	195,100	63,500	105,100	132,600	96,400
Women	17,300	38,300	23,500	60,100	13,700	15,900
Total scientists	59,900	119,700	63,200	129,100	47,500	49,800
Men	45,100	85,600	40,300	71,700	35,100	36,400
Women	14,800	34,100	22,900	57,500	12,400	13,400
Physical scientists	5,700	8,300	8,900	9,600	7,400	6,100
Men	5,200	6,700	7,800	7,800	7,100	4,500
Women	500	1,700	1,100	1,800	300	1,600
Chemists	4,200	6,600	2,700	4,600	5,300	1,800
Men	3,800	5,400	2,000	3,500	5,000	1,100
Women	400	1,100	700	1,200	200	700
Physicists/astronomers	800	200	4,700	3,700	1,900	3,100
Men	800	200	4,600	3,400	1,900	2,500
Women	(2)	(2)	100	300	(2)	600
Other physical scientists	800	1,500	1,500	1,200	200	1,100
Men	700	1,000	1,200	900	200	800
Women	100	500	300	300	(2)	300
Mathematical scientists	1,300	2,200	900	2,700	1,200	1,700
Men	700	1,200	600	1,300	900	1,300
Women	600	1,000	300	1,400	300	400
Mathematicians	700	1,400	700	1,500	1,100	1,500
Men	400	500	600	700	800	1,200
Women	300	900	200	800	300	300
Statisticians	600	800	200	1,200	100	200
Men	300	600	100	700	100	100
Women	400	200	200	500	(2)	100
Computer specialists	5,000	19,700	5,600	14,300	5,400	12,700
Men	4,100	13,100	4,600	9,700	3,900	9,600
Women	900	6,600	1,000	4,600	1,500	3,100
Environmental scientists	2,200	5,800	2,000	1,300	3,700	3,300
Men	2,100	5,100	1,700	1,000	3,700	2,700
Women	100	700	200	300	(2)	600
Earth scientists	1,900	5,600	1,800	600	3,400	1,900
Men	1,900	4,900	1,600	500	3,400	1,400
Women	(2)	700	200	100	(2)	500
Oceanographers	100	(2)	(2)	400	100	100
Men	100	(2)	(2)	300	100	100
Women	(2)	(2)	(2)	100	(2)	(2)
Atmospheric scientists	200	200	100	300	100	1,400
Men	200	200	100	300	100	1,300
Women	(2)	(2)	(2)	100	(2)	100
Life scientists	20,100	31,000	12,200	28,800	7,000	8,500
Men	17,500	25,000	7,700	15,400	5,800	6,800
Women	2,600	5,900	4,500	13,300	1,200	1,700
Biological scientists	15,100	20,800	6,500	19,200	4,900	4,900
Men	12,900	16,300	4,400	9,200	4,200	3,500
Women	2,200	4,500	2,100	9,900	700	1,400
Agricultural scientists	4,600	9,000	400	3,800	1,500	2,300
Men	4,500	7,700	400	1,900	1,300	2,100
Women	100	1,300	(2)	1,900	200	300
Medical scientists	500	1,100	5,300	5,800	600	1,300
Men	200	1,000	2,900	4,300	400	1,200
Women	300	100	2,400	1,500	200	100
Psychologists	7,600	14,800	19,400	45,300	10,100	5,300
Men	5,100	9,200	11,600	23,400	6,800	2,900
Women	2,500	5,600	7,800	21,900	3,300	2,400
Social scientists	18,000	37,900	14,200	27,200	12,700	12,200
Men	10,300	25,400	6,200	13,000	6,900	8,700
Women	7,600	12,500	8,000	14,200	5,900	3,500

Table 9 cont.

Field and sex	Sector of employment					
	State/local government		Nonprofit organizations		Other (1)	
	1976	1986	1976	1986	1976	1986
Economists	2,600	5,500	900	3,600	2,900	6,000
Men	2,200	3,500	600	2,500	2,700	5,100
Women	500	1,900	200	1,100	200	900
Sociologists/anthropologists	3,600	11,400	1,700	9,700	500	1,700
Men	2,200	8,300	900	2,900	200	600
Women	1,400	3,100	800	6,700	300	1,100
Other social scientists	11,800	21,000	11,700	14,000	9,400	4,500
Men	6,000	13,500	4,700	7,600	4,000	3,000
Women	5,800	7,500	6,900	6,400	5,400	1,600
Total engineers	74,600	113,700	23,900	36,100	98,900	62,500
Men	72,200	109,500	23,200	33,400	97,600	60,000
Women	2,500	4,200	600	2,600	1,300	2,500
Aeronautical/astronautical	700	400	700	2,800	2,200	5,000
Men	700	400	700	2,300	2,200	4,600
Women	(2)	(2)	(2)	500	(2)	400
Chemical	1,100	1,600	1,200	2,600	2,500	2,600
Men	900	1,500	1,200	2,400	2,400	2,300
Women	200	100	(2)	100	100	200
Civil	50,700	75,900	2,000	1,900	19,900	10,200
Men	48,600	73,300	2,000	1,800	19,100	9,900
Women	2,000	2,600	(2)	100	800	300
Electrical/electronics	4,300	6,600	4,000	8,900	11,900	14,800
Men	4,300	6,400	4,000	8,600	11,600	14,200
Women	(2)	200	(2)	300	300	600
Industrial	NA	2,000	NA	2,300	NA	1,500
Men	NA	1,900	NA	2,200	NA	1,500
Women	NA	(2)	NA	100	NA	(2)
Materials	NA	200	NA	300	NA	1,200
Men	NA	200	NA	300	NA	1,100
Women	NA	(2)	NA	(2)	NA	100
Mechanical	3,100	4,300	6,900	5,700	11,600	8,200
Men	3,100	4,100	6,900	5,600	11,600	7,900
Women	(2)	200	(2)	200	(2)	300
Mining	NA	300	NA	(2)	NA	400
Men	NA	200	NA	(2)	NA	400
Women	NA	100	NA	(2)	NA	(2)
Nuclear	NA	100	NA	300	NA	2,000
Men	NA	100	NA	300	NA	2,000
Women	NA	(2)	NA	(2)	NA	(2)
Petroleum	NA	600	NA	(2)	NA	800
Men	NA	600	NA	(2)	NA	800
Women	NA	100	NA	(2)	NA	100
Other engineers	14,700	21,700	9,000	11,200	50,800	15,800
Men	14,500	20,800	8,400	9,900	50,700	15,300
Women	200	900	600	1,300	100	400

(1) Includes other government, military, other, and no report
(2) Too few cases to estimate
NA = Not available

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 10. Employed doctoral scientists and engineers by field, sex, and sector of employment: 1977 and 1987

Field and sex	Sector of employment							
	Total		Industry		Educational institutions		Federal government	
	1977	1987	1977	1987	1977	1987	1977	1987
Total, all fields	285,100	419,100	71,600	131,700	163,800	218,700	21,400	27,500
Men	257,500	352,400	68,600	115,800	144,900	181,100	20,100	24,100
Women	27,600	66,700	3,000	15,900	18,900	37,600	1,300	3,400
Total scientists	240,000	351,400	48,700	94,600	147,900	195,000	17,900	23,900
Men	212,700	286,300	45,800	79,600	129,100	158,000	16,600	20,600
Women	27,300	65,000	2,900	14,900	18,700	37,000	1,200	3,300
Physical scientists	57,500	68,600	23,000	30,700	27,100	30,300	3,900	4,300
Men	54,600	63,200	22,400	28,700	25,300	27,600	3,700	3,900
Women	2,900	5,500	600	2,100	1,800	2,700	200	400
Chemists	37,400	44,100	18,700	24,100	14,800	16,300	1,800	1,900
Men	35,000	39,700	18,100	22,300	13,400	14,200	1,700	1,600
Women	2,400	4,500	600	1,800	1,500	2,100	100	300
Physicists/astronomers	20,100	24,500	4,300	6,700	12,300	14,100	2,100	2,400
Men	19,600	23,500	4,200	6,400	11,900	13,400	2,100	2,400
Women	600	1,000	100	300	400	600	100	100
Mathematical scientists	14,600	16,700	1,300	1,800	12,200	13,700	600	800
Men	13,600	15,100	1,300	1,600	11,300	12,400	600	800
Women	1,000	1,600	100	200	900	1,300	(2)	100
Mathematicans	12,800	13,900	1,000	1,400	11,000	11,600	400	600
Men	11,900	12,600	1,000	1,200	10,100	10,500	400	500
Women	900	1,300	(2)	100	800	1,100	(2)	(2)
Statisticians	1,800	2,800	300	500	1,200	2,000	200	300
Men	1,600	2,500	300	400	1,100	1,800	200	200
Women	100	300	(2)	100	100	200	(2)	(2)
Computer specialists	5,800	18,600	3,100	11,400	2,100	5,600	300	800
Men	5,500	16,700	3,000	10,300	2,000	5,000	200	800
Women	200	1,900	100	1,100	100	600	(2)	(2)
Environmental scientists	13,000	17,800	3,100	5,200	6,300	7,500	2,400	3,400
Men	12,600	16,500	3,000	4,900	6,000	6,900	2,400	3,100
Women	400	1,300	100	300	300	600	100	200
Earth scientists	9,700	13,600	2,700	4,700	4,600	5,100	1,600	2,400
Men	9,400	12,600	2,600	4,400	4,400	4,700	1,600	2,200
Women	300	1,000	100	200	200	400	(2)	200
Oceanographers	1,600	2,000	100	200	1,000	1,300	300	400
Men	1,500	1,800	100	200	900	1,200	300	300
Women	100	200	(2)	(2)	(2)	100	(2)	(2)
Atmospheric scientists	1,700	2,200	300	300	700	1,100	500	600
Men	1,700	2,100	300	300	700	1,000	500	600
Women	100	100	(2)	(2)	(2)	100	(2)	(2)
Life scientists	70,500	107,400	9,700	20,500	46,900	66,400	6,400	8,700
Men	61,400	85,300	9,200	17,200	40,200	51,700	5,800	7,400
Women	9,100	22,100	600	3,200	6,700	14,700	600	1,300
Biological scientists	42,100	62,000	4,000	9,700	30,800	41,700	3,400	5,100
Men	35,400	48,500	3,600	7,900	25,600	32,200	3,000	4,200
Women	6,700	13,500	300	1,900	5,200	9,500	400	900
Agricultural scientists	12,100	15,800	2,500	3,900	7,000	8,900	2,100	2,200
Men	11,900	14,700	2,500	3,600	6,900	8,300	2,100	2,100
Women	200	1,100	(2)	300	200	600	(2)	100
Medical scientists	16,400	29,600	3,200	6,900	9,100	15,800	900	1,400
Men	14,200	22,100	3,000	5,800	7,700	11,200	800	1,000
Women	2,200	7,500	200	1,100	1,400	4,600	100	300
Psychologists	33,700	56,400	5,500	17,400	18,500	25,400	1,200	1,400
Men	26,100	37,300	4,400	11,000	14,300	17,400	1,100	1,000
Women	7,600	19,100	1,200	6,300	4,200	7,900	100	400

Table 10 cont.

Field and sex	Sector of employment							
	Total		Industry		Educational institutions		Federal government	
	1977	1987	1977	1987	1977	1987	1977	1987
Social scientists	44,900	65,900	3,000	7,600	34,700	46,200	3,100	4,500
Men	39,000	52,400	2,700	5,900	30,000	37,000	2,800	3,600
Women	6,000	13,500	200	1,700	4,800	9,200	200	900
Economists	13,000	17,800	1,700	2,800	8,800	11,800	1,400	1,400
Men	12,200	15,800	1,700	2,400	8,200	10,600	1,300	1,200
Women	800	2,000	100	400	600	1,200	100	200
Sociologists/anthropologists	9,500	12,900	200	1,200	8,500	10,400	100	300
Men	7,200	9,000	100	900	6,600	7,300	100	200
Women	2,300	3,900	(2)	300	2,000	3,100	(2)	100
Other social scientists	22,500	35,100	1,000	3,600	17,400	24,000	1,600	2,800
Men	19,600	27,500	900	2,500	15,200	19,200	1,400	2,300
Women	2,900	7,600	100	1,000	2,200	4,800	100	500
Total engineers	45,100	67,800	22,900	37,100	15,900	23,700	3,500	3,600
Men	44,800	66,000	22,800	36,200	15,800	23,100	3,500	3,500
Women	300	1,700	100	900	100	600	(2)	100
Aeronautical/astronautical	2,000	5,000	800	3,200	600	900	400	600
Men	2,000	4,900	800	3,100	500	900	400	500
Women	(2)	100	(2)	100	(2)	(2)	(2)	(2)
Chemical	5,600	6,900	4,100	4,700	1,200	1,900	200	200
Men	5,600	6,800	4,100	4,600	1,200	1,900	200	200
Women	(2)	100	(2)	100	(2)	100	(2)	(2)
Civil	4,100	6,500	1,200	1,900	2,200	3,800	300	400
Men	4,100	6,300	1,200	1,900	2,200	3,700	300	400
Women	(2)	200	(2)	(2)	(2)	100	(2)	(2)
Electrical/electronics	8,300	12,600	3,900	7,600	3,300	4,000	600	600
Men	8,200	12,300	3,900	7,400	3,300	3,900	600	600
Women	(2)	400	(2)	200	(2)	100	(2)	(2)
Materials science	5,200	8,100	3,200	5,400	1,500	1,900	300	400
Men	5,200	7,800	3,200	5,300	1,500	1,800	300	400
Women	(2)	200	(2)	200	(2)	100	(2)	(2)
Mechanical	4,600	6,700	2,100	2,600	2,000	3,500	300	300
Men	4,600	6,600	2,100	2,600	2,000	3,500	300	300
Women	(2)	100	(2)	(2)	(2)	100	(2)	(2)
Nuclear	1,800	2,200	1,000	1,200	500	500	200	100
Men	1,800	2,100	1,000	1,200	500	500	200	100
Women	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Systems design	3,600	3,900	1,900	2,200	800	1,200	400	300
Men	3,500	3,800	1,900	2,100	800	1,100	400	200
Women	(2)	200	(2)	100	(2)	(2)	(2)	(2)
Other engineers	9,900	15,800	4,700	8,200	3,900	5,900	800	800
Men	9,800	15,400	4,600	8,000	3,900	5,800	800	700
Women	100	400	(2)	200	(2)	200	(2)	(2)

Table 10 cont.

Field and sex	Sector of employment					
	State/local government		Nonprofit organizations		Other (1)	
	1977	1987	1977	1987	1977	1987
Total, all fields	5,300	9,200	10,200	15,500	12,800	16,500
Men	4,500	7,100	8,800	11,900	10,600	12,300
Women	800	2,100	1,400	3,500	2,200	4,300
Total scientists	4,900	8,700	8,600	13,300	12,000	15,900
Men	4,100	6,700	7,200	9,800	9,800	11,700
Women	800	2,000	1,400	3,500	2,200	4,200
Physical scientists	300	400	2,000	2,200	1,100	700
Men	300	400	1,900	1,900	1,100	600
Women	(2)	(2)	200	200	100	100
Chemists	200	400	1,100	1,100	800	400
Men	200	400	900	900	700	400
Women	(2)	(2)	100	200	100	100
Physicists/astronomers	(2)	(2)	1,000	1,100	400	200
Men	(2)	(2)	1,000	1,100	400	200
Women	(2)	(2)	(2)	(2)	(2)	(2)
Mathematical scientists	100	(2)	300	200	200	200
Men	(2)	(2)	200	100	200	200
Women	(2)	(2)	(2)	(2)	(2)	(2)
Mathematicans	(2)	(2)	200	100	100	200
Men	(2)	(2)	200	100	100	200
Women	(2)	(2)	(2)	(2)	(2)	(2)
Statisticians	(2)	(2)	(2)	(2)	(2)	(2)
Men	(2)	(2)	(2)	(2)	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Computer specialists	100	300	200	400	100	100
Men	100	200	200	400	100	100
Women	(2)	100	(2)	100	(2)	(2)
Environmental scientists	500	900	500	700	200	200
Men	500	800	500	600	200	200
Women	(2)	100	(2)	100	(2)	(2)
Earth scientists	400	900	300	400	100	100
Men	400	800	300	300	100	100
Women	(2)	100	(2)	100	(2)	(2)
Oceanographers	100	(2)	100	100	100	(2)
Men	100	(2)	100	100	100	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	(2)	(2)	200	200	(2)	(2)
Men	(2)	(2)	200	200	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Life scientists	1,500	1,900	2,400	4,300	3,700	5,600
Men	1,200	1,500	1,900	3,200	3,100	4,300
Women	200	400	500	1,100	600	1,300
Biological scientists	500	1,000	1,700	2,900	1,700	1,600
Men	400	800	1,300	2,100	1,400	1,200
Women	100	200	400	800	300	300
Agricultural scientists	300	300	100	400	100	100
Men	300	300	100	400	100	100
Women	(2)	(2)	(2)	(2)	(2)	(2)
Medical scientists	600	700	600	1,000	1,900	3,900
Men	500	400	500	700	1,700	2,900
Women	100	200	100	300	300	1,000
Psychologists	1,300	2,200	1,300	2,500	5,800	7,500
Men	1,000	1,500	900	1,300	4,300	5,000
Women	300	700	300	1,200	1,500	2,500

Table 10 cont.

Field and sex	Sector of employment					
	State/local government		Nonprofit organizations		Other (1)	
	1977	1987	1977	1987	1977	1987
Social scientists	1,200	2,900	2,000	3,100	1,000	1,600
Men	1,000	2,300	1,600	2,300	900	1,300
Women	200	600	400	800	100	300
Economists	100	500	500	600	500	800
Men	100	400	400	500	400	700
Women	(2)	(2)	100	100	(2)	100
Sociologists/anthropologists	100	200	400	600	100	200
Men	100	100	300	400	(2)	100
Women	100	100	100	200	(2)	100
Other social scientists	900	2,200	1,100	1,900	500	600
Men	800	1,700	900	1,400	400	500
Women	200	500	200	500	(2)	100
Total engineers	400	500	1,600	2,200	800	600
Men	400	500	1,500	2,100	800	600
Women	(2)	(2)	(2)	(2)	(2)	(2)
Aeronautical/astronautical	(2)	(2)	100	300	200	(2)
Men	(2)	(2)	100	300	200	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Chemical	(2)	(2)	100	100	(2)	100
Men	(2)	(2)	100	100	(2)	100
Women	(2)	(2)	(2)	(2)	(2)	(2)
Civil	200	300	(2)	(2)	100	(2)
Men	200	200	(2)	(2)	100	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Electrical/electronics	(2)	(2)	300	300	100	100
Men	(2)	(2)	300	200	100	100
Women	(2)	(2)	(2)	(2)	(2)	(2)
Materials science	(2)	(2)	200	300	(2)	(2)
Men	(2)	(2)	200	300	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Mechanical	(2)	(2)	200	200	(2)	(2)
Men	(2)	(2)	200	200	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Nuclear	(2)	(2)	100	300	(2)	(2)
Men	(2)	(2)	100	300	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)
Systems design	(2)	(2)	300	200	100	100
Men	(2)	(2)	300	200	100	100
Women	(2)	(2)	(2)	(2)	(2)	(2)
Other engineers	100	100	300	500	200	300
Men	100	100	300	500	200	200
Women	(2)	(2)	(2)	(2)	(2)	(2)

(1) Includes military, hospital/clinics, other, and no report
(2) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 11. Recent science and engineering degree recipients by field, degree level, and sector of employment: 1986 (1984 and 1985 graduates)

Field and degree level	Sector of employment						
	Total (1)	Industry	Educational institutions	Federal government	State/local government	Nonprofit organizations	Other (2)
	Bachelor's						
Total, all fields	470,500	309,400	35,000	29,100	28,400	16,400	52,200
Total scientists	326,200	198,500	32,800	16,000	22,700	15,600	40,600
Physical scientists	19,200	11,700	2,500	700	800	400	3,000
Chemists	10,700	7,300	1,100	400	600	300	1,100
Physicists/astronomers	4,000	2,500	600	300	(3)	100	600
Other physical scientists	4,500	2,000	900	100	200	(3)	1,300
Mathematical scientists	25,700	14,300	5,400	1,700	1,600	200	2,400
Computer scientists	66,100	52,200	2,400	4,700	2,500	900	3,400
Environmental scientists	9,800	5,700	700	600	700	100	1,800
Life scientists	52,700	24,300	9,100	3,700	3,100	2,100	10,400
Biological scientists	35,000	13,400	7,800	2,400	1,400	1,300	8,700
Agricultural scientists	17,700	10,900	1,300	1,300	1,700	800	1,700
Psychologists	42,400	18,500	5,900	800	2,300	6,900	8,100
Social scientists	110,300	71,800	6,700	3,500	11,600	5,100	11,600
Economists	39,300	32,200	900	2,200	2,600	400	1,000
Sociologists/anthropologists	19,000	8,300	2,100	1,200	2,400	2,000	3,000
Other social scientists	52,000	31,200	3,700	200	6,600	2,700	7,500
Total engineers	144,300	111,000	2,200	13,000	5,700	800	11,600
Aeronautical/astronautical	4,600	3,400	(3)	500	(3)	(3)	600
Chemical	10,800	8,500	200	700	400	(3)	1,000
Civil	17,300	10,900	100	1,200	3,500	100	1,400
Electrical/electronics	44,100	34,100	700	5,300	400	300	3,300
Industrial	9,700	8,100	100	500	200	100	700
Materials	2,100	1,800	(3)	100	(3)	(3)	100
Mechanical	33,100	27,000	200	2,600	500	100	2,700
Mining	1,800	1,400	(3)	200	100	(3)	(3)
Nuclear	700	400	(3)	200	(3)	(3)	100
Petroleum	2,400	2,100	(3)	100	100	(3)	100
Other engineers	17,800	13,400	700	1,700	400	100	1,500

Table 11 cont.

Field and degree level	Sector of employment						
	Total (1)	Industry	Educational institutions	Federal government	State/local government	Nonprofit organizations	Other (2)
	Master's						
Total, all fields	86,500	48,600	13,100	6,800	7,200	3,400	7,400
Total scientists	55,900	25,400	12,200	4,500	5,400	2,900	5,600
Physical scientists	4,000	2,100	1,000	300	100	100	400
Chemists	2,000	1,300	300	200	(3)	(3)	100
Physicists/astronomers	1,100	700	300	100	(3)	100	100
Other physical scientists	800	200	400	(3)	100	(3)	200
Mathematical scientists	5,800	2,800	2,100	400	100	300	300
Computer scientists	15,900	11,500	2,000	600	200	500	1,100
Environmental scientists	3,300	2,000	400	500	200	100	200
Life scientists	10,200	2,700	3,200	1,200	1,400	400	1,300
Biological scientists	6,700	1,600	2,400	600	700	200	1,200
Agricultural scientists	3,500	1,100	800	600	700	100	100
Psychologists	3,800	500	1,100	100	700	300	1,000
Social scientists	12,900	3,700	2,600	1,500	2,600	1,200	1,300
Economists	3,300	1,000	900	600	500	(3)	300
Sociologists/anthropologists	2,500	600	1,000	100	300	500	100
Other social scientists	7,100	2,200	700	700	1,800	800	900
Total engineers	30,600	23,200	900	2,300	1,800	500	1,800
Aeronautical/astronautical	900	700	(3)	100	(3)	(3)	200
Chemical	2,200	2,000	100	(3)	(3)	100	100
Civil	4,600	2,800	100	300	800	100	600
Electrical/electronics	9,400	7,900	200	700	300	200	200
Industrial	1,500	1,200	(3)	100	(3)	(3)	100
Materials	900	700	100	(3)	(3)	(3)	100
Mechanical	4,800	3,800	100	500	100	100	300
Mining	300	200	(3)	(3)	(3)	(3)	(3)
Nuclear	500	400	(3)	(3)	(3)	(3)	(3)
Petroleum	300	300	(3)	(3)	(3)	(3)	(3)
Other engineers	5,100	3,300	300	600	500	100	400

(1) Exclusive of full-time graduate students
(2) Includes other government, military, other, and no report
(3) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 11a. Recent doctoral science and engineering degree recipients by field and sector of employment: 1987 (1985 & 1986 graduates)

Field and degree level	Sector of employment						
	Total	Industry	Educational institutions	Federal government	State/local government	Nonprofit organizations	Other (1)
Total, all fields	34,200	8,900	18,200	1,900	1,000	1,900	2,400
Total scientists	28,900	6,100	16,100	1,700	900	1,800	2,300
Physical scientists	5,100	2,100	2,200	400	(2)	200	100
Chemists	3,300	1,600	1,300	300	(2)	100	(2)
Physicists/astronomers	1,800	500	1,000	100	(2)	100	(2)
Mathematical scientists	1,200	100	1,000	(2)	(2)	(2)	100
Mathematicans	900	100	700	(2)	(2)	(2)	100
Statisticians	300	(2)	300	(2)	(2)	(2)	(2)
Computer specialists	1,300	700	500	(2)	(2)	(2)	(2)
Environmental scientists	1,200	200	700	200	(2)	100	(2)
Earth scientists	800	200	400	100	(2)	(2)	(2)
Oceanographers	200	(2)	100	(2)	(2)	100	(2)
Atmospheric scientists	100	(2)	100	(2)	(2)	(2)	(2)
Life scientists	9,500	1,300	6,300	700	200	500	500
Biological scientists	5,800	800	4,000	400	100	400	200
Agricultural scientists	1,200	200	800	200	(2)	(2)	(2)
Medical scientists	2,400	200	1,600	100	100	100	300
Psychologists	5,500	1,200	2,100	100	100	500	1,400
Social scientists	5,300	500	3,200	300	500	400	300
Economists	1,600	200	900	100	200	100	100
Sociologists/anthropologists	800	100	500	(2)	(2)	100	(2)
Other social scientists	2,900	200	1,800	200	300	200	100
Total engineers	5,300	2,800	2,000	200	100	100	100
Aeronautical/astronautical	300	200	100	(2)	(2)	(2)	(2)
Chemical	700	400	200	(2)	(2)	(2)	(2)
Civil	400	100	200	(2)	(2)	(2)	(2)
Electrical/electronics	1,200	700	400	(2)	(2)	(2)	(2)
Materials science	700	400	200	(2)	(2)	(2)	(2)
Mechanical	500	200	300	(2)	(2)	(2)	(2)
Nuclear	100	(2)	(2)	(2)	(2)	(2)	(2)
Systems design	300	200	(2)	(2)	(2)	(2)	(2)
Other engineers	1,100	500	600	(2)	(2)	(2)	(2)

(1) Includes hospitals, other government, military, other, and no report
(2) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 12. Employed scientists and engineers by field, selected sector of employment, and primary work activity: 1986

Field and sector of employment	Primary work activity							
	Total	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
Total, all fields	4,626,500	1,268,900	135,700	257,700	875,500	1,282,200	398,600	883,600
Industry	3,134,500	895,500	13,100	117,600	764,800	936,400	294,100	642,400
Educational institutions	627,000	168,900	91,300	62,700	14,900	71,500	19,200	52,300
Federal Government	354,100	114,100	16,800	42,700	54,600	117,200	48,300	68,900
State/local government	233,300	35,600	3,000	12,600	20,000	84,300	12,100	72,200
Nonprofit organizations	165,200	36,900	9,400	15,500	12,000	50,700	16,700	34,000
Other (1)	112,300	17,800	2,200	6,600	9,000	22,000	8,200	13,900
Total scientists	2,186,300	473,700	123,100	168,400	182,200	545,600	162,600	383,000
Industry	1,193,700	229,900	9,400	68,400	152,200	354,600	106,000	248,700
Educational institutions	526,200	138,300	85,700	46,800	5,800	58,000	15,300	42,700
Federal Government	167,900	55,400	14,300	28,200	12,900	46,700	18,100	28,600
State/local government	119,700	16,300	2,700	9,700	4,000	37,400	7,900	29,500
Nonprofit organizations	129,100	25,300	9,100	11,300	4,900	38,400	10,800	27,600
Other (1)	49,800	8,500	1,900	4,100	2,600	10,400	4,500	5,900
Physical scientists	288,400	115,200	28,000	42,500	44,700	73,400	43,000	30,500
Industry	163,700	71,000	3,900	26,000	41,100	53,500	31,100	22,400
Educational institutions	71,100	20,400	15,900	3,900	600	5,600	1,700	3,900
Federal Government	29,700	15,600	5,500	7,800	2,300	8,700	6,300	2,400
State/local government	8,300	1,800	500	1,100	100	800	200	600
Nonprofit organizations	9,600	4,600	1,200	2,800	600	3,200	2,500	700
Other (1)	6,100	1,900	900	900	(3)	1,600	1,200	400
Chemists	184,700	73,500	11,300	26,500	35,700	46,000	24,900	21,100
Industry	122,900	54,900	2,400	18,900	33,600	37,200	20,400	16,800
Educational institutions	36,100	9,400	6,800	2,200	300	2,700	700	2,000
Federal Government	12,700	5,800	1,600	2,700	1,500	3,600	2,500	1,100
State/local government	6,600	1,100	200	900	(3)	800	200	600
Nonprofit organizations	4,600	2,000	200	1,500	200	1,500	1,000	500
Other (1)	1,800	400	100	300	(3)	200	(3)	200
Physicists/astronomers	72,600	31,000	14,300	10,900	5,900	20,400	13,800	6,600
Industry	26,600	10,800	1,400	4,500	4,900	12,000	8,400	3,600
Educational institutions	27,200	9,600	8,000	1,400	200	2,300	500	1,800
Federal Government	11,700	7,400	2,900	3,800	700	3,700	2,600	1,000
State/local government	200	200	200	(3)	(3)	(3)	(3)	(3)
Nonprofit organizations	3,700	1,800	1,000	800	(3)	1,400	1,300	100
Other (1)	3,100	1,200	800	400	(3)	1,100	1,000	100
Other physical scientists	31,100	10,700	2,500	5,100	3,200	7,000	4,300	2,700
Industry	14,200	5,300	100	2,600	2,600	4,300	2,300	2,000
Educational institutions	7,700	1,500	1,100	300	100	600	400	200
Federal Government	5,300	2,400	1,000	1,400	100	1,400	1,200	300
State/local government	1,500	400	100	200	(3)	100	(3)	100
Nonprofit organizations	1,200	800	(3)	400	300	300	200	100
Other (1)	1,100	300	100	100	(3)	300	200	100
Mathematical scientists	131,000	18,100	5,300	6,700	6,000	35,600	14,700	21,000
Industry	54,700	6,600	100	2,200	4,300	27,900	12,000	15,000
Educational institutions	58,700	6,900	4,900	1,900	100	3,200	500	2,600
Federal Government	11,100	3,500	200	1,900	1,300	2,800	1,600	1,200
State/local government	2,200	100	(3)	100	100	400	200	100
Nonprofit organizations	2,700	700	(3)	500	200	1,000	100	900
Other (1)	1,700	200	(3)	100	(3)	400	200	200
Mathematicians	110,700	14,600	5,100	4,400	5,100	32,500	13,000	19,500
Industry	46,300	5,800	100	1,900	3,800	25,700	10,800	14,900
Educational institutions	51,900	5,300	4,700	400	100	2,900	500	2,400
Federal Government	8,200	2,900	200	1,500	1,200	2,400	1,200	1,100
State/local government	1,400	100	(3)	(3)	(3)	300	200	100
Nonprofit organizations	1,500	500	(3)	400	(3)	900	100	800
Other (1)	1,500	100	(3)	100	(3)	400	200	200

Table 12 cont.

Field and sector of employment	Primary work activity							
	Total	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
Statisticians	20,300	3,400	300	2,300	900	3,100	1,700	1,400
Industry	8,500	800	(3)	200	500	2,200	1,200	1,000
Educational institutions	6,800	1,700	200	1,500	(3)	200	(3)	200
Federal Government	2,900	600	(3)	400	100	400	300	100
State/local government	800	100	(3)	(3)	(3)	100	(3)	100
Nonprofit organizations	1,200	300	(3)	100	200	200	100	100
Other (1)	200	100	(3)	(3)	(3)	(3)	(3)	(3)
Computer specialists	562,600	112,800	4,200	10,900	97,800	86,800	32,800	54,000
Industry	439,700	94,800	500	8,100	86,300	71,700	27,400	44,300
Educational institutions	37,700	6,200	3,200	1,200	1,800	3,500	1,400	2,200
Federal Government	38,500	5,800	200	700	5,000	6,500	1,800	4,600
State/local government	19,700	1,100	(3)	200	900	2,400	600	1,800
Nonprofit organizations	14,300	2,600	300	500	1,700	1,300	900	400
Other (1)	12,700	2,300	(3)	200	2,000	1,400	700	700
Environmental scientists	111,300	36,400	10,000	19,900	6,400	21,800	7,500	14,300
Industry	65,100	16,700	1,400	10,100	5,100	14,300	4,800	9,500
Educational institutions	18,200	8,200	5,400	2,700	100	1,000	200	800
Federal Government	17,600	8,200	2,300	4,900	1,000	4,200	1,700	2,500
State/local government	5,800	2,100	400	1,500	200	1,300	500	900
Nonprofit organizations	1,300	700	300	300	(3)	400	200	100
Other (1)	3,300	600	100	500	(3)	700	(3)	600
Earth scientists	93,700	28,800	7,100	15,800	5,900	17,800	5,600	12,200
Industry	60,200	15,900	1,200	9,700	5,000	12,300	3,600	8,700
Educational institutions	14,400	5,100	3,500	1,500	100	800	100	700
Federal Government	11,000	5,600	1,900	3,000	700	2,600	1,300	1,400
State/local government	5,600	2,000	400	1,400	200	1,300	400	900
Nonprofit organizations	600	100	(3)	(3)	(3)	300	200	100
Other (1)	1,900	200	100	100	(3)	400	(3)	400
Oceanographers	4,200	2,600	1,500	1,000	100	1,200	500	600
Industry	900	200	(3)	200	(3)	600	100	500
Educational institutions	1,800	1,600	1,200	400	(3)	100	100	(3)
Federal Government	1,000	500	100	300	100	400	300	100
State/local government	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Nonprofit organizations	400	300	300	100	(3)	100	100	(3)
Other (1)	100	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Atmospheric scientists	13,500	5,000	1,400	3,200	400	2,800	1,300	1,500
Industry	4,000	600	200	200	200	1,400	1,100	300
Educational institutions	1,900	1,500	700	800	(3)	(3)	(3)	(3)
Federal Government	5,600	2,100	400	1,600	100	1,200	200	1,000
State/local government	200	100	(3)	100	(3)	100	100	(3)
Nonprofit organizations	300	300	100	200	(3)	(3)	(3)	(3)
Other (1)	1,400	400	(3)	400	(3)	200	(3)	200
Life scientists	411,800	128,400	57,600	55,100	15,700	110,200	30,100	80,100
Industry	153,100	25,900	2,300	12,900	10,700	58,800	14,800	44,000
Educational institutions	147,900	67,800	41,500	24,700	1,600	14,100	6,300	7,900
Federal Government	42,400	15,800	5,400	8,400	2,000	14,400	3,900	10,600
State/local government	31,000	6,100	1,200	4,300	500	12,900	2,900	10,100
Nonprofit organizations	28,800	10,900	6,400	3,800	700	8,500	1,800	6,700
Other (1)	8,500	1,900	700	1,100	100	1,400	500	900
Biological scientists	273,300	89,100	46,400	32,900	9,900	69,300	19,100	50,200
Industry	92,100	17,900	2,100	8,900	6,900	36,000	9,500	26,400
Educational institutions	104,000	45,100	32,700	11,600	700	8,500	3,900	4,600
Federal Government	32,300	11,700	4,400	5,800	1,400	11,900	3,200	8,700
State/local government	20,800	4,500	1,200	3,000	400	8,200	1,800	6,400
Nonprofit organizations	19,200	8,700	5,600	2,800	300	4,000	700	3,300
Other (1)	4,900	1,400	500	700	100	800	100	700

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Table 12 cont.

Field and sector of employment	Primary work activity							
	Total	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
Agricultural scientists	103,300	25,400	4,600	16,300	4,600	31,200	7,700	23,500
Industry	53,400	6,100	200	2,600	3,300	18,700	3,800	14,900
Educational institutions	25,700	13,500	3,300	9,700	500	4,300	2,200	2,100
Federal Government	9,000	3,800	900	2,300	600	2,300	600	1,700
State/local government	9,000	1,500	100	1,300	200	4,000	1,000	3,000
Nonprofit organizations	3,800	300	(3)	200	100	1,700	100	1,700
Other (1)	2,300	300	100	200	(3)	200	100	100
Medical scientists	35,200	13,800	6,600	6,000	1,200	9,700	3,300	6,400
Industry	7,600	1,900	(3)	1,400	600	4,100	1,400	2,700
Educational institutions	18,300	9,200	5,500	3,300	400	1,300	200	1,100
Federal Government	1,100	400	100	300	(3)	300	100	100
State/local government	1,100	100	(3)	100	(3)	800	100	700
Nonprofit organizations	5,800	1,900	900	800	200	2,800	1,100	1,700
Other (1)	1,300	300	100	200	(3)	400	400	100
Psychologists	253,500	20,600	7,900	9,500	3,200	65,900	9,500	56,500
Industry	101,800	3,000	400	1,100	1,500	34,600	3,100	31,500
Educational institutions	79,400	11,400	6,700	4,200	400	13,600	1,600	12,000
Federal Government	6,900	2,300	200	1,700	400	1,700	400	1,300
State/local government	14,800	1,100	200	600	300	3,400	700	2,700
Nonprofit organizations	45,300	2,500	400	1,500	600	10,900	2,700	8,200
Other (1)	5,300	400	(3)	400	(3)	1,500	900	700
Social scientists	427,800	42,200	10,100	23,700	8,500	151,800	25,200	126,600
Industry	215,500	12,100	900	8,000	3,200	93,800	12,800	81,000
Educational institutions	113,100	17,400	8,000	8,200	1,200	17,000	3,600	13,400
Federal Government	21,800	4,200	500	2,800	900	8,400	2,400	5,900
State/local government	37,900	4,000	300	1,800	1,800	16,100	2,800	13,400
Nonprofit organizations	27,200	3,400	400	1,900	1,000	13,100	2,600	10,500
Other (1)	12,200	1,200	(3)	900	300	3,400	1,000	2,400
Economists	163,600	20,600	3,700	13,200	3,600	53,900	8,700	45,200
Industry	102,200	6,000	400	4,300	1,300	44,200	5,600	38,600
Educational institutions	33,600	7,300	2,700	4,500	100	2,300	1,100	1,100
Federal Government	12,800	3,500	300	2,500	700	3,600	1,300	2,300
State/local government	5,500	1,100	(3)	400	600	1,800	200	1,500
Nonprofit organizations	3,600	1,700	300	700	600	1,000	200	800
Other (1)	6,000	1,000	(3)	800	200	1,100	300	800
Sociologists/anthropologists	93,400	9,100	4,200	3,600	1,400	27,600	6,100	21,500
Industry	34,200	1,400	400	600	300	12,900	2,500	10,300
Educational institutions	34,100	5,200	3,300	1,400	500	5,700	1,200	4,500
Federal Government	2,300	300	100	100	(3)	900	200	700
State/local government	11,400	1,000	300	400	300	3,600	700	2,900
Nonprofit organizations	9,700	1,200	100	900	200	4,000	1,300	2,700
Other (1)	1,700	100	(3)	100	(3)	500	100	500
Other social scientists	170,800	12,500	2,200	6,900	3,500	70,300	10,400	59,900
Industry	79,100	4,700	(3)	3,200	1,600	36,800	4,700	32,100
Educational institutions	45,500	5,000	2,100	2,200	600	9,000	1,300	7,700
Federal Government	6,700	400	(3)	200	100	3,900	900	2,900
State/local government	21,000	1,900	(3)	1,000	900	10,800	1,900	8,900
Nonprofit organizations	14,000	500	(3)	300	200	8,100	1,000	7,100
Other (1)	4,500	100	(3)	(3)	(3)	1,800	700	1,200
Total engineers	2,440,100	795,200	12,700	89,300	693,200	736,600	236,000	500,600
Industry	1,940,800	665,600	3,700	49,200	612,700	581,800	188,100	393,700
Educational institutions	100,900	30,600	5,500	15,900	9,200	13,500	3,900	9,600
Federal Government	186,200	58,700	2,500	14,500	41,700	70,500	30,200	40,300
State/local government	113,700	19,300	300	2,900	16,100	46,800	4,200	42,600
Nonprofit organizations	36,100	11,700	200	4,300	7,200	12,300	5,900	6,400
Other (1)	62,500	9,300	300	2,600	6,500	11,600	3,700	8,000

Table 12 cont.

Field and sector of employment	Total	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
Aeronautical/astronautical	110,500	50,200	1,500	8,300	40,400	30,900	20,700	10,200
Industry	80,900	39,000	300	3,900	34,800	23,800	15,200	8,600
Educational institutions	3,800	1,400	200	900	400	100	100	(3)
Federal Government	17,700	7,600	1,000	2,300	4,300	6,300	4,800	1,500
State/local government	400	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Nonprofit organizations	2,800	1,600	(3)	1,100	500	400	400	(3)
Other (1)	5,000	600	(3)	100	500	300	200	100
Chemical	149,000	51,300	1,200	7,300	42,800	50,500	18,400	32,100
Industry	128,300	45,000	600	4,400	40,100	43,300	14,400	28,900
Educational institutions	7,200	2,600	500	1,800	300	1,200	(3)	1,200
Federal Government	6,700	2,800	(3)	1,000	1,700	3,000	2,200	800
State/local government	1,600	200	(3)	(3)	200	900	100	800
Nonprofit organizations	2,600	400	100	100	300	1,700	1,500	100
Other (1)	2,600	300	(3)	100	200	300	100	200
Civil	346,300	53,000	900	6,600	45,500	126,600	10,700	115,900
Industry	215,000	31,700	300	2,300	29,100	71,800	6,000	65,800
Educational institutions	10,500	2,300	100	1,700	500	2,300	300	2,000
Federal Government	32,800	5,200	200	800	4,300	15,500	900	14,700
State/local government	75,900	12,800	300	1,800	10,800	33,000	3,000	30,000
Nonprofit organizations	1,900	100	(3)	100	(3)	1,000	300	700
Other (1)	10,200	1,000	(3)	100	900	3,000	300	2,600
Electrical/electronics	574,500	241,400	3,400	24,800	213,300	166,500	78,700	87,800
Industry	463,300	201,600	700	13,600	187,200	136,400	64,200	72,200
Educational institutions	27,200	9,200	1,800	4,300	3,100	3,800	1,400	2,400
Federal Government	53,700	21,000	600	4,300	16,100	18,800	10,600	8,200
State/local government	6,600	2,700	(3)	700	2,000	1,900	200	1,800
Nonprofit organizations	8,900	3,500	200	1,100	2,200	2,700	1,100	1,600
Other (1)	14,800	3,400	100	700	2,600	2,900	1,200	1,700
Industrial	137,700	25,700	200	900	24,600	47,400	8,100	39,300
Industry	121,100	22,800	100	600	22,100	43,400	6,800	36,500
Educational institutions	4,700	600	100	200	300	500	200	200
Federal Government	6,000	1,200	(3)	100	1,100	1,900	600	1,300
State/local government	2,000	300	(3)	(3)	300	700	500	200
Nonprofit organizations	2,300	700	(3)	(3)	700	800	(3)	800
Other (1)	1,500	100	(3)	(3)	100	200	(3)	200
Materials	53,100	20,600	1,300	4,200	15,100	15,400	5,800	9,600
Industry	45,200	17,300	300	2,700	14,300	14,100	5,000	9,100
Educational institutions	4,000	1,900	900	800	300	400	400	(3)
Federal Government	2,200	700	(3)	400	300	600	300	300
State/local government	200	(3)	(3)	(3)	(3)	100	(3)	100
Nonprofit organizations	300	100	(3)	(3)	100	100	(3)	100
Other (1)	1,200	500	(3)	400	100	(3)	(3)	(3)
Mechanical	492,600	207,100	2,400	14,600	190,000	149,600	51,700	97,900
Industry	426,100	186,700	900	8,800	177,100	131,700	43,800	88,000
Educational institutions	18,300	5,700	1,300	2,300	2,200	2,100	200	1,900
Federal Government	30,000	10,500	200	2,300	8,000	10,600	5,200	5,400
State/local government	4,300	500	(3)	(3)	500	1,900	200	1,700
Nonprofit organizations	5,700	1,800	(3)	800	1,000	1,800	1,400	400
Other (1)	8,200	1,800	(3)	500	1,300	1,400	1,000	400
Mining	17,300	2,600	100	1,200	1,300	4,500	1,800	2,700
Industry	14,400	2,000	(3)	700	1,300	4,100	1,500	2,600
Educational institutions	1,000	200	(3)	200	(3)	(3)	(3)	(3)
Federal Government	1,100	300	(3)	200	(3)	300	300	(3)
State/local government	300	100	(3)	100	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Other (1)	400	(3)	(3)	(3)	(3)	(3)	(3)	(3)

Table 12 cont.

Field and sector of employment	Primary work activity							
	Total	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
Nuclear	22,700	5,400	100	2,100	3,200	4,800	2,000	2,800
Industry	14,100	3,500	(3)	1,200	2,300	2,700	900	1,800
Educational institutions	1,300	400	100	200	100	(3)	(3)	(3)
Federal Government	5,100	800	(3)	200	600	1,700	1,000	600
State/local government	100	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Nonprofit organizations	300	300	(3)	100	200	(3)	(3)	(3)
Other (1)	2,000	400	100	300	(3)	400	(3)	400
Petroleum	30,800	4,500	100	1,300	3,100	6,200	1,200	5,000
Industry	28,000	3,800	(3)	1,100	2,700	6,000	1,100	4,800
Educational institutions	500	300	(3)	100	100	(3)	(3)	(3)
Federal Government	800	200	(3)	(3)	200	100	(3)	100
State/local government	600	(3)	(3)	(3)	(3)	100	(3)	100
Nonprofit organizations	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Other (1)	800	100	(3)	100	(3)	(3)	(3)	(3)
Other engineers	505,600	133,500	1,500	18,000	114,000	134,300	36,900	97,400
Industry	404,500	112,200	500	10,000	101,600	104,500	29,200	75,300
Educational institutions	22,400	6,100	600	3,600	1,900	3,000	1,200	1,800
Federal Government	30,100	8,300	300	2,900	5,100	11,700	4,300	7,400
State/local government	21,700	2,700	100	400	2,300	8,200	300	7,900
Nonprofit organizations	11,200	3,200	(3)	1,000	2,200	3,800	1,200	2,600
Other (1)	15,800	1,000	(3)	200	800	3,000	700	2,300

Table 12 cont.

Field and sector of employment	Primary work activity			
	Teaching	Production/ inspection	Reporting, stat work, computing	Other (2)
Total, all fields	357,800	582,600	472,800	662,100
Industry	16,900	454,900	338,500	492,200
Educational institutions	318,200	12,600	21,800	34,000
Federal Government	3,800	48,900	51,500	18,600
State/local government	6,200	46,600	34,000	26,600
Nonprofit organizations	7,300	8,300	18,200	43,900
Other (1)	5,400	11,300	8,900	46,900
Total scientists	300,800	159,000	359,600	347,700
Industry	9,500	119,200	250,700	229,800
Educational institutions	273,200	5,400	20,000	31,200
Federal Government	2,700	13,900	40,000	9,300
State/local government	5,400	14,400	26,300	19,800
Nonprofit organizations	6,600	2,700	16,200	40,000
Other (1)	3,400	3,400	6,400	17,700
Physical scientists	45,800	32,200	6,900	14,900
Industry	600	23,700	4,100	10,800
Educational institutions	43,900	300	600	300
Federal Government	200	3,400	1,400	400
State/local government	400	3,900	500	900
Nonprofit organizations	400	500	200	700
Other (1)	200	300	200	1,800
Chemists	25,100	28,200	3,000	9,000
Industry	500	21,300	1,900	7,200
Educational institutions	23,700	200	100	100
Federal Government	(3)	2,600	400	200
State/local government	400	3,700	400	200
Nonprofit organizations	400	200	100	400
Other (1)	100	200	100	800
Physicists/astronomers	14,900	1,500	2,200	2,600
Industry	100	800	1,400	1,500
Educational institutions	14,700	(3)	400	100
Federal Government	(3)	300	300	(3)
State/local government	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	300	100	200
Other (1)	100	100	(3)	700
Other physical scientists	5,800	2,500	1,600	3,400
Industry	(3)	1,600	800	2,100
Educational institutions	5,500	100	100	(3)
Federal Government	200	400	600	200
State/local government	(3)	300	100	700
Nonprofit organizations	(3)	(3)	(3)	100
Other (1)	100	100	100	300
Mathematical scientists	46,600	5,100	16,500	9,200
Industry	300	3,800	9,000	7,100
Educational institutions	45,600	400	1,600	1,000
Federal Government	500	400	3,800	100
State/local government	100	400	1,000	100
Nonprofit organizations	(3)	(3)	900	(3)
Other (1)	(3)	(3)	200	900
Mathematicians	43,600	4,500	8,000	7,400
Industry	300	3,200	5,300	5,900
Educational institutions	42,600	400	100	500
Federal Government	500	400	1,900	100
State/local government	100	400	500	100
Nonprofit organizations	(3)	(3)	100	(3)
Other (1)	(3)	(3)	100	900

Table 12 cont.

Field and sector of employment	Primary work activity			
	Teaching	Production/ inspection	Reporting, stat work, computing	Other (2)
Statisticians	3,000	600	8,500	1,800
Industry	(3)	600	3,700	1,200
Educational institutions	3,000	(3)	1,500	500
Federal Government	(3)	(3)	1,800	(3)
State/local government	(3)	(3)	600	(3)
Nonprofit organizations	(3)	(3)	800	(3)
Other (1)	(3)	(3)	100	(3)
Computer specialists	19,600	20,500	271,300	51,600
Industry	3,800	18,000	209,200	42,200
Educational institutions	14,200	600	11,400	1,800
Federal Government	300	1,000	23,800	1,100
State/local government	1,000	200	14,600	300
Nonprofit organizations	(3)	(3)	9,200	1,100
Other (1)	400	600	3,100	5,000
Environmental scientists	9,200	23,800	6,800	13,300
Industry	200	19,500	3,600	10,900
Educational institutions	8,300	200	100	400
Federal Government	400	2,400	2,100	300
State/local government	100	1,300	600	300
Nonprofit organizations	(3)	(3)	(3)	100
Other (1)	100	300	400	1,300
Earth scientists	8,700	22,300	4,500	11,500
Industry	200	19,200	2,800	9,700
Educational institutions	8,000	100	100	300
Federal Government	400	1,500	800	100
State/local government	100	1,300	500	300
Nonprofit organizations	(3)	(3)	(3)	100
Other (1)	(3)	200	100	1,000
Oceanographers	100	100	200	(3)
Industry	(3)	(3)	100	(3)
Educational institutions	100	(3)	(3)	(3)
Federal Government	(3)	100	100	(3)
State/local government	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)
Other (1)	(3)	(3)	(3)	(3)
Atmospheric scientists	400	1,400	2,200	1,800
Industry	(3)	300	700	1,100
Educational institutions	200	(3)	(3)	100
Federal Government	100	900	1,200	200
State/local government	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)
Other (1)	(3)	200	300	300
Life scientists	61,500	44,000	13,300	54,400
Industry	1,100	29,800	4,500	33,000
Educational institutions	56,700	1,800	2,900	4,700
Federal Government	500	5,300	2,800	3,600
State/local government	1,500	5,400	1,900	3,100
Nonprofit organizations	900	900	800	6,800
Other (1)	700	700	400	3,300
Biological scientists	48,400	22,800	9,300	34,500
Industry	900	13,000	3,600	20,900
Educational institutions	45,000	1,000	1,800	2,600
Federal Government	300	3,900	2,300	2,200
State/local government	1,200	4,000	1,100	1,900
Nonprofit organizations	400	700	200	5,300
Other (1)	600	300	300	1,500

Table 12 cont.

Field and sector of employment	Primary work activity			
	Teaching	Production/ inspection	Reporting, stat work, computing	Other (2)
Agricultural scientists	6,100	20,100	3,800	16,600
Industry	300	15,900	900	11,500
Educational institutions	5,100	900	900	1,000
Federal Government	200	1,300	500	1,000
State/local government	200	1,500	800	1,000
Nonprofit organizations	200	100	600	800
Other (1)	100	400	(3)	1,300
Medical scientists	7,000	1,100	300	3,400
Industry	(3)	800	100	600
Educational institutions	6,600	(3)	100	1,100
Federal Government	(3)	100	(3)	400
State/local government	(3)	(3)	(3)	200
Nonprofit organizations	300	100	(3)	700
Other (1)	(3)	100	(3)	400
Psychologists	39,100	11,000	5,300	111,600
Industry	2,200	8,000	2,300	51,800
Educational institutions	30,600	1,600	1,300	21,000
Federal Government	400	100	400	1,900
State/local government	1,300	300	300	8,400
Nonprofit organizations	4,100	800	1,000	26,000
Other (1)	600	200	(3)	2,600
Social scientists	79,000	22,500	39,500	92,600
Industry	1,300	16,500	17,900	74,000
Educational institutions	74,000	400	2,200	2,100
Federal Government	300	1,400	5,800	1,700
State/local government	1,000	2,800	7,400	6,600
Nonprofit organizations	1,100	400	4,100	5,200
Other (1)	1,500	1,100	2,100	3,000
Economists	23,900	8,100	20,800	36,400
Industry	100	6,600	12,500	32,800
Educational institutions	23,200	(3)	100	600
Federal Government	100	600	4,500	500
State/local government	(3)	100	1,900	600
Nonprofit organizations	(3)	(3)	600	300
Other (1)	400	800	1,200	1,500
Sociologists/anthropologists	23,700	6,700	6,400	19,800
Industry	1,000	4,500	1,700	12,700
Educational institutions	21,300	400	800	600
Federal Government	(3)	300	400	400
State/local government	100	1,400	1,000	4,300
Nonprofit organizations	700	(3)	2,300	1,400
Other (1)	400	100	100	300
Other social scientists	31,500	7,700	12,200	36,500
Industry	200	5,300	3,700	28,400
Educational institutions	29,400	(3)	1,300	800
Federal Government	200	500	900	800
State/local government	900	1,300	4,400	1,700
Nonprofit organizations	300	400	1,200	3,500
Other (1)	600	200	700	1,100
Total engineers	56,900	423,600	113,200	314,500
Industry	7,400	335,700	87,900	262,400
Educational institutions	44,900	7,200	1,800	2,800
Federal Government	1,100	35,000	11,400	9,400
State/local government	800	32,200	7,700	6,800
Nonprofit organizations	700	5,600	2,000	3,900
Other (1)	1,900	7,900	2,500	29,200

Table 12 cont.

Field and sector of employment	Primary work activity			
	Teaching	Production/ inspection	Reporting, stat work, computing	Other (2)
Aeronautical/astronautical	2,900	11,300	5,800	9,400
Industry	400	7,900	4,800	5,000
Educational institutions	2,300	(3)	(3)	(3)
Federal Government	(3)	2,200	800	800
State/local government	(3)	300	(3)	100
Nonprofit organizations	(3)	300	(3)	400
Other (1)	200	700	100	3,100
Chemical	3,500	22,800	5,000	16,000
Industry	200	21,500	4,400	13,900
Educational institutions	3,300	(3)	(3)	100
Federal Government	(3)	600	200	200
State/local government	(3)	300	200	100
Nonprofit organizations	(3)	(3)	(3)	400
Other (1)	100	400	200	1,300
Civil	6,800	73,500	14,400	72,000
Industry	700	42,100	7,000	61,700
Educational institutions	4,300	900	200	500
Federal Government	100	7,900	2,600	1,300
State/local government	600	21,100	4,300	4,100
Nonprofit organizations	100	300	100	300
Other (1)	900	1,000	200	4,100
Electrical/electronics	14,000	84,100	23,100	45,300
Industry	1,800	69,600	17,800	36,100
Educational institutions	11,600	2,000	200	400
Federal Government	500	7,400	3,400	2,600
State/local government	(3)	1,600	100	300
Nonprofit organizations	(3)	1,700	800	300
Other (1)	100	1,800	900	5,700
Industrial	3,500	36,700	10,400	14,100
Industry	200	33,800	9,400	11,600
Educational institutions	3,100	400	100	100
Federal Government	100	1,700	600	500
State/local government	100	500	100	400
Nonprofit organizations	(3)	(3)	200	600
Other (1)	(3)	300	(3)	900
Materials	1,600	10,700	800	4,000
Industry	(3)	9,700	600	3,400
Educational institutions	1,500	100	(3)	(3)
Federal Government	(3)	600	(3)	200
State/local government	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	(3)	100	(3)
Other (1)	(3)	200	(3)	400
Mechanical	9,300	72,900	12,900	40,800
Industry	900	61,200	10,600	35,000
Educational institutions	7,900	1,700	200	700
Federal Government	200	6,400	1,200	1,200
State/local government	(3)	1,000	700	200
Nonprofit organizations	100	1,700	100	200
Other (1)	300	900	300	3,500
Mining	700	5,900	1,100	2,600
Industry	(3)	5,400	700	2,300
Educational institutions	700	(3)	100	(3)
Federal Government	(3)	300	200	100
State/local government	(3)	100	(3)	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)
Other (1)	(3)	100	100	200

Table 12 cont.

Field and sector of employment	Primary work activity			
	Teaching	Production/ inspection	Reporting, stat work, computing	Other (2)
Nuclear	900	6,300	2,000	3,300
Industry	200	3,500	1,600	2,700
Educational institutions	700	100	(3)	(3)
Federal Government	(3)	2,000	400	200
State/local government	(3)	(3)	(3)	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)
Other (1)	100	600	(3)	500
Petroleum	200	13,100	1,700	5,100
Industry	100	12,600	1,100	4,400
Educational institutions	100	100	(3)	(3)
Federal Government	(3)	300	(3)	(3)
State/local government	(3)	(3)	500	(3)
Nonprofit organizations	(3)	(3)	(3)	(3)
Other (1)	(3)	(3)	(3)	700
Other engineers	13,700	86,500	36,000	101,700
Industry	3,000	68,300	29,900	86,600
Educational institutions	9,600	1,700	1,000	900
Federal Government	300	5,600	2,000	2,200
State/local government	100	7,300	1,900	1,600
Nonprofit organizations	500	1,500	600	1,600
Other (1)	300	2,000	600	8,800

(1) Includes other government, military, other, and no report
(2) Includes consulting, other, and no report
(3) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 13. Employed scientists and engineers by field, sex, and primary work activity: 1976 and 1986

Field and sex	Primary work activity							
	Total		Research and development					
			Total		Basic research		Applied research	
	1976	1986	1976	1986	1976	1986	1976	1986
Total, all fields	2,331,200	4,626,500	655,500	1,268,900	69,500	135,700	147,700	257,700
Men	2,131,600	3,927,800	606,200	1,116,700	55,400	102,700	127,800	211,700
Women	199,700	698,600	49,300	152,200	14,100	33,000	19,800	46,000
Total scientists	959,500	2,186,300	231,000	473,700	63,400	123,100	102,400	168,400
Men	781,300	1,586,700	191,400	362,600	50,000	91,600	84,800	129,700
Women	178,200	599,600	39,600	111,100	13,400	31,500	17,600	38,700
Physical scientists	188,900	288,400	77,600	115,200	20,000	28,000	33,400	42,500
Men	172,700	250,100	70,700	100,500	17,600	24,500	30,100	36,300
Women	16,200	38,300	6,800	14,700	2,400	3,500	3,300	6,200
Chemists	132,800	184,700	50,300	73,500	8,200	11,300	22,600	26,500
Men	119,100	156,000	44,400	62,500	6,400	9,400	19,600	21,900
Women	13,700	28,800	6,000	10,900	1,800	1,900	3,000	4,600
Physicists/astronomers	44,300	72,600	20,900	31,000	10,300	14,300	7,300	10,900
Men	42,600	67,700	20,300	28,800	9,800	12,800	7,100	10,300
Women	1,700	4,900	600	2,200	500	1,400	100	600
Other physical scientists	11,800	31,100	6,300	10,700	1,500	2,500	3,500	5,100
Men	10,900	26,400	6,100	9,100	1,400	2,300	3,400	4,100
Women	800	4,700	200	1,500	100	200	100	1,000
Mathematical scientists	48,600	131,000	8,300	18,100	1,900	5,300	3,800	6,700
Men	37,100	97,100	6,400	15,200	1,900	5,000	2,900	5,400
Women	11,500	33,900	1,900	2,900	(2)	300	900	1,300
Mathematicians	43,400	110,700	7,400	14,600	1,800	5,100	3,100	4,400
Men	33,700	81,500	5,800	12,500	1,800	4,800	2,400	3,600
Women	9,700	29,200	1,700	2,200	(2)	200	700	800
Statisticians	5,200	20,300	900	3,400	(2)	300	700	2,300
Men	3,400	15,600	600	2,700	(2)	200	500	1,700
Women	1,800	4,800	200	700	(2)	(2)	200	600
Computer specialists	119,000	562,600	27,500	112,800	400	4,200	1,500	10,900
Men	98,400	400,000	21,600	83,700	300	3,200	1,200	8,000
Women	20,600	162,500	5,900	29,200	100	1,000	300	2,800
Environmental scientists	54,800	111,300	22,900	36,400	6,500	10,000	12,900	19,900
Men	50,900	98,400	20,000	31,200	5,300	8,200	11,200	17,400
Women	3,900	12,900	2,900	5,100	1,200	1,800	1,700	2,600
Earth scientists	46,500	93,700	17,500	28,800	5,100	7,100	9,000	15,800
Men	42,900	82,200	14,800	24,200	4,000	5,500	7,400	13,500
Women	3,600	11,500	2,700	4,500	1,000	1,500	1,600	2,300
Oceanographers	4,400	4,200	3,800	2,600	200	1,500	3,500	1,000
Men	4,400	3,500	3,800	2,400	200	1,300	3,500	900
Women	(2)	700	(2)	200	(2)	100	(2)	(2)
Atmospheric scientists	3,800	13,500	1,600	5,000	1,200	1,400	300	3,200
Men	3,600	12,800	1,400	4,600	1,000	1,300	300	2,900
Women	300	700	200	400	200	100	(2)	300
Life scientists	213,500	411,800	64,800	128,400	26,300	57,600	31,400	55,100
Men	179,600	309,000	50,800	91,000	19,200	39,600	25,300	40,800
Women	33,900	102,800	14,000	37,400	7,100	18,000	6,100	14,300
Biological scientists	139,400	273,300	41,100	89,100	20,300	46,400	16,900	32,900
Men	115,300	199,600	31,100	60,200	14,800	30,800	12,700	23,000
Women	24,100	73,600	10,000	28,900	5,500	15,600	4,200	9,800
Agricultural scientists	40,700	103,300	10,900	25,400	1,200	4,600	7,300	16,300
Men	39,100	81,500	10,400	19,800	1,100	3,100	7,000	13,400
Women	1,600	21,800	500	5,700	100	1,400	400	2,900
Medical scientists	33,300	35,200	12,900	13,800	4,900	6,600	7,100	6,000
Men	25,100	27,900	9,300	11,000	3,400	5,700	5,600	4,400
Women	8,200	7,300	3,600	2,800	1,500	900	1,500	1,600
Psychologists	112,500	253,500	7,900	20,600	3,200	7,900	3,600	9,500
Men	76,900	138,400	5,900	11,300	2,200	4,600	2,500	5,300
Women	35,600	115,200	2,000	9,300	1,000	3,300	1,000	4,300
Social scientists	222,300	427,800	22,000	42,200	5,100	10,100	15,900	23,700
Men	165,700	293,800	15,900	29,700	3,500	6,400	11,600	16,500
Women	56,600	134,000	6,000	12,600	1,600	3,600	4,300	7,200

Table 13 cont.

Field and sex	Primary work activity							
	Total		Research and development					
			Total		Basic research		Applied research	
	1976	1986	1976	1986	1976	1986	1976	1986
Economists	62,500	163,600	6,900	20,600	900	3,700	5,400	13,200
Men	54,600	131,700	6,300	16,800	700	3,300	5,000	10,500
Women	8,000	31,900	600	3,700	200	400	400	2,700
Sociologists/anthropologists	33,900	93,400	5,700	9,100	2,600	4,200	3,100	3,600
Men	22,500	48,600	3,700	4,700	1,600	1,700	2,100	2,100
Women	11,400	44,800	1,900	4,400	1,000	2,400	900	1,500
Other social scientists	125,900	170,800	9,400	12,500	1,600	2,200	7,400	6,900
Men	88,700	113,500	5,900	8,100	1,200	1,400	4,400	3,900
Women	37,200	57,300	3,500	4,400	500	800	2,900	3,000
Total engineers	1,371,700	2,440,100	424,500	795,200	6,100	12,700	45,300	89,300
Men	1,350,300	2,341,100	414,700	754,100	5,400	11,100	43,000	82,000
Women	21,400	99,000	9,800	41,100	700	1,500	2,300	7,400
Aeronautical/astronautical	56,800	110,500	25,400	50,200	900	1,500	4,500	8,300
Men	56,400	106,200	25,000	47,800	900	900	4,400	7,500
Women	400	4,300	400	2,400	(2)	600	100	800
Chemical	77,500	149,000	28,400	51,300	200	1,200	4,200	7,300
Men	75,000	137,800	27,800	45,600	200	1,000	3,800	6,400
Women	2,500	11,200	500	5,600	(2)	200	300	900
Civil	188,200	346,300	34,400	53,000	300	900	3,100	6,600
Men	182,800	333,400	31,900	49,100	300	800	2,300	5,800
Women	5,400	12,900	2,500	3,900	(2)	100	800	800
Electrical/electronics	283,000	574,500	114,300	241,400	1,400	3,400	10,400	24,800
Men	281,400	555,500	113,700	231,300	1,400	3,200	10,400	23,400
Women	1,600	18,900	600	10,100	(2)	200	(2)	1,400
Industrial	NA	137,700	NA	25,700	NA	200	NA	900
Men	NA	130,600	NA	23,900	NA	100	NA	600
Women	NA	7,100	NA	1,700	NA	100	NA	200
Materials	NA	53,100'	NA	20,600	NA	1,300	NA	4,200
Men	NA	50,500	NA	19,400	NA	1,200	NA	3,900
Women	NA	2,500	NA	1,100	NA	(2)	NA	300
Mechanical	276,200	492,600	112,900	207,100	700	2,400	7,400	14,600
Men	273,900	478,600	112,100	199,900	700	2,300	7,400	13,600
Women	2,300	14,000	700	7,200	100	200	(2)	1,000
Mining	NA	17,300	NA	2,600	NA	100	NA	1,200
Men	NA	16,600	NA	2,300	NA	(2)	NA	1,000
Women	NA	700	NA	300	NA	100	NA	200
Nuclear	NA	22,700	NA	5,400	NA	100	NA	2,100
Men	NA	21,900	NA	5,300	NA	100	NA	2,000
Women	NA	800	NA	100	NA	(2)	NA	(2)
Petroleum	NA	30,800	NA	4,500	NA	100	NA	1,300
Men	NA	28,900	NA	4,200	NA	100	NA	1,300
Women	NA	1,800	NA	300	NA	(2)	NA	(2)
Other engineers	490,000	505,600	109,200	133,500	2,500	1,500	15,700	18,000
Men	480,900	481,000	104,200	125,200	1,800	1,400	14,700	16,300
Women	9,100	24,600	5,000	8,300	600	100	1,100	1,700

Table 13 cont.

Field and sex	Primary work activity							
	Research and development		Management/administration					
	Development		Total		Of R & D		Other than R & D	
	1976	1986	1976	1986	1976	1986	1976	1986
Total, all fields	438,400	875,500	687,100	1,282,200	220,000	398,600	467,100	883,600
Men	423,000	802,300	652,900	1,148,300	209,500	367,200	443,300	781,100
Women	15,400	73,200	34,200	133,800	10,400	31,400	23,800	102,500
Total scientists	65,200	182,200	263,500	545,600	88,300	162,600	175,100	383,000
Men	56,600	141,300	232,600	424,900	79,700	135,500	152,900	289,400
Women	8,600	41,000	30,900	120,600	8,600	27,000	22,300	93,600
Physical scientists	24,200	44,700	50,700	73,400	29,900	43,000	20,800	30,500
Men	23,000	39,700	48,400	68,200	29,300	40,900	19,000	27,300
Women	1,200	5,100	2,300	5,200	600	2,100	1,700	3,100
Chemists	19,500	35,700	38,600	46,000	22,000	24,900	16,600	21,100
Men	18,400	31,200	36,700	42,200	21,500	23,300	15,200	18,900
Women	1,200	4,500	1,900	3,800	500	1,600	1,400	2,300
Physicists/astronomers	3,400	5,900	9,200	20,400	6,500	13,800	2,800	6,600
Men	3,400	5,700	8,900	19,500	6,400	13,400	2,500	6,100
Women	(2)	200	300	800	100	400	200	500
Other physical scientists	1,200	3,200	2,900	7,000	1,500	4,300	1,400	2,700
Men	1,200	2,800	2,700	6,500	1,500	4,200	1,300	2,300
Women	(2)	400	100	500	(2)	200	100	400
Mathematical scientists	2,600	6,000	13,800	35,600	6,200	14,700	7,600	21,000
Men	1,600	4,700	12,200	28,400	4,900	12,200	7,300	16,300
Women	1,000	1,300	1,600	7,200	1,300	2,500	300	4,700
Mathematicians	2,500	5,100	11,900	32,500	4,400	13,000	7,400	19,500
Men	1,600	4,000	10,900	26,000	3,700	10,800	7,100	15,200
Women	1,000	1,100	1,000	6,500	700	2,200	300	4,300
Statisticians	100	900	1,900	3,100	1,800	1,700	200	1,400
Men	100	700	1,300	2,400	1,100	1,400	200	1,100
Women	(2)	100	600	700	600	300	(2)	400
Computer specialists	25,600	97,800	24,800	86,800	8,200	32,800	16,600	54,000
Men	20,100	72,400	22,800	70,600	7,400	27,200	15,400	43,300
Women	5,500	25,400	2,000	16,200	900	5,600	1,200	10,600
Environmental scientists	3,600	6,400	14,900	21,800	6,500	7,500	8,400	14,300
Men	3,500	5,600	14,800	19,900	6,400	7,000	8,400	13,000
Women	100	800	200	1,900	200	500	(2)	1,400
Earth scientists	3,500	5,900	13,800	17,800	6,000	5,600	7,800	12,200
Men	3,400	5,200	13,700	16,300	5,800	5,100	7,800	11,200
Women	100	800	100	1,500	100	500	(2)	1,000
Oceanographers	(2)	100	300	1,200	200	500	100	600
Men	(2)	100	300	800	200	500	100	200
Women	(2)	(2)	(2)	400	(2)	(2)	(2)	400
Atmospheric scientists	100	400	800	2,800	400	1,300	500	1,500
Men	100	300	800	2,800	300	1,300	500	1,500
Women	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Life scientists	7,100	15,700	62,300	110,200	18,600	30,100	43,700	80,100
Men	6,400	10,600	56,600	93,300	17,600	26,100	39,100	67,200
Women	800	5,100	5,700	16,900	1,100	4,000	4,600	13,000
Biological scientists	3,900	9,900	37,100	69,300	12,500	19,100	24,600	50,200
Men	3,700	6,400	34,000	57,500	11,600	16,000	22,400	41,500
Women	200	3,400	3,100	11,800	900	3,100	2,200	8,700
Agricultural scientists	2,400	4,600	11,900	31,200	4,300	7,700	7,600	23,500
Men	2,400	3,300	11,700	27,200	4,200	7,000	7,500	20,300
Women	(2)	1,300	200	4,000	100	700	100	3,300
Medical scientists	900	1,200	13,400	9,700	1,900	3,300	11,600	6,400
Men	300	800	11,000	8,500	1,700	3,200	9,200	5,400
Women	600	300	2,500	1,100	100	100	2,300	1,000
Psychologists	1,200	3,200	22,000	65,900	4,600	9,500	17,400	56,500
Men	1,200	1,500	17,400	37,200	3,900	5,100	13,500	32,100
Women	(2)	1,700	4,600	28,700	700	4,300	3,900	24,400
Social scientists	1,000	8,500	74,800	151,800	14,200	25,200	60,700	126,600
Men	900	6,700	60,400	107,300	10,300	17,100	50,100	90,200
Women	100	1,700	14,400	44,500	3,900	8,100	10,500	36,400

Table 13 cont.

Field and sex	Primary work activity							
	Research and development		Management/administration					
	Development		Total		Of R & D		Other than R & D	
	1976	1986	1976	1986	1976	1986	1976	1986
Economists	600	3,600	24,300	53,900	4,600	8,700	19,700	45,200
Men	600	3,000	23,100	43,900	3,700	6,800	19,400	37,000
Women	(2)	600	1,200	10,000	900	1,900	300	8,200
Sociologists/anthropologists	(2)	1,400	7,400	27,600	1,400	6,100	6,100	21,500
Men	(2)	900	5,000	13,100	1,000	2,700	4,000	10,400
Women	(2)	500	2,400	14,500	400	3,300	2,100	11,200
Other social scientists	400	3,500	43,100	70,300	8,200	10,400	34,900	59,900
Men	300	2,900	32,300	50,300	5,600	7,600	26,700	42,800
Women	100	600	10,800	20,000	2,500	2,900	8,100	17,100
Total engineers	373,100	693,200	423,600	736,600	131,700	236,000	292,000	500,600
Men	366,400	661,000	420,300	723,400	129,800	231,700	290,500	491,700
Women	6,800	32,200	3,300	13,200	1,800	4,300	1,500	8,900
Aeronautical/astronautical	20,000	40,400	19,000	30,900	13,900	20,700	5,100	10,200
Men	19,700	39,300	19,000	30,500	13,900	20,600	5,100	9,900
Women	300	1,100	(2)	400	(2)	100	(2)	300
Chemical	24,000	42,800	28,600	50,500	8,600	18,400	20,000	32,100
Men	23,800	38,300	28,100	49,400	8,100	18,100	20,000	31,300
Women	200	4,500	500	1,000	500	300	(2)	700
Civil	31,000	45,500	64,800	126,600	6,000	10,700	58,800	115,900
Men	29,300	42,500	64,000	124,500	6,000	10,700	58,000	113,800
Women	1,700	3,000	800	2,100	(2)	100	800	2,100
Electrical/electronics	102,500	213,300	87,100	166,500	38,900	78,700	48,200	87,800
Men	101,900	204,600	86,900	164,000	38,700	77,400	48,200	86,500
Women	600	8,600	200	2,500	200	1,200	(2)	1,300
Industrial	NA	24,600	NA	47,400	NA	8,100	NA	39,300
Men	NA	23,200	NA	46,200	NA	7,800	NA	38,400
Women	NA	1,400	NA	1,200	NA	300	NA	900
Materials	NA	15,100	NA	15,400	NA	5,800	NA	9,600
Men	NA	14,300	NA	15,100	NA	5,600	NA	9,400
Women	NA	800	NA	300	NA	100	NA	200
Mechanical	104,700	190,000	88,800	149,600	29,700	51,700	59,100	97,900
Men	104,100	184,000	87,900	148,000	28,700	51,100	59,100	96,800
Women	700	6,000	1,000	1,600	1,000	600	(2)	1,000
Mining	NA	1,300	NA	4,500	NA	1,800	NA	2,700
Men	NA	1,300	NA	4,400	NA	1,800	NA	2,600
Women	NA	(2)	NA	100	NA	(2)	NA	100
Nuclear	NA	3,200	NA	4,800	NA	2,000	NA	2,800
Men	NA	3,100	NA	4,700	NA	2,000	NA	2,700
Women	NA	(2)	NA	100	NA	(2)	NA	100
Petroleum	NA	3,100	NA	6,200	NA	1,200	NA	5,000
Men	NA	2,900	NA	6,000	NA	1,100	NA	4,900
Women	NA	200	NA	100	NA	(2)	NA	100
Other engineers	91,000	114,000	135,300	134,300	34,600	36,900	100,700	97,400
Men	87,700	107,500	134,500	130,600	34,400	35,400	100,100	95,200
Women	3,300	6,500	800	3,700	200	1,500	600	2,200

Table 13 cont.

Field and sex	Primary work activity							
	Teaching		Production/ inspection		Reporting, stat work, computing		Other (1)	
	1976	1986	1976	1986	1976	1986	1976	1986
Total, all fields	163,300	357,800	253,000	582,600	107,700	472,800	464,700	662,100
Men	131,800	276,300	241,300	529,000	88,600	341,100	410,900	516,400
Women	31,500	81,500	11,700	53,600	19,100	131,700	53,800	145,700
Total scientists	141,300	300,800	58,500	159,000	70,300	359,600	195,000	347,700
Men	109,900	223,300	50,200	124,400	52,100	237,200	145,100	214,300
Women	31,400	77,500	8,300	34,600	18,100	122,400	50,000	133,400
Physical scientists	22,700	45,800	19,700	32,200	3,800	6,900	14,500	14,900
Men	20,300	39,000	17,600	24,100	3,000	5,700	12,600	12,600
Women	2,300	6,800	2,100	8,000	700	1,200	1,800	2,300
Chemists	13,300	25,100	18,000	28,200	2,000	3,000	10,500	9,000
Men	11,600	20,800	16,000	20,800	1,300	2,300	9,100	7,400
Women	1,800	4,300	1,900	7,400	700	800	1,400	1,600
Physicists/astronomers	8,400	14,900	1,300	1,500	1,200	2,200	3,200	2,600
Men	7,900	13,600	1,100	1,300	1,200	2,200	3,100	2,200
Women	500	1,300	100	200	(2)	100	100	300
Other physical scientists	900	5,800	400	2,500	500	1,600	700	3,400
Men	800	4,500	400	2,000	500	1,300	500	3,000
Women	100	1,300	100	500	(2)	400	300	400
Mathematical scientists	17,400	46,600	2,000	5,100	4,500	16,500	2,600	9,200
Men	12,500	33,800	1,400	3,500	2,500	10,900	2,200	5,300
Women	5,000	12,800	600	1,600	2,000	5,600	400	3,900
Mathematicians	16,900	43,600	1,800	4,500	3,200	8,000	2,200	7,400
Men	12,000	31,100	1,200	3,100	1,900	5,000	1,900	3,900
Women	4,900	12,500	500	1,400	1,400	3,100	300	3,500
Statisticians	500	3,000	200	600	1,200	8,500	400	1,800
Men	500	2,700	200	500	600	5,900	300	1,400
Women	(2)	300	100	100	700	2,600	100	400
Computer specialists	3,800	19,600	4,000	20,500	38,700	271,300	20,300	51,600
Men	2,900	12,800	3,100	15,900	31,700	180,700	16,400	36,300
Women	900	6,800	900	4,500	7,000	90,600	3,900	15,300
Environmental scientists	3,100	9,200	3,400	23,800	2,300	6,800	8,100	13,300
Men	2,700	8,300	3,300	21,900	2,100	5,700	8,100	11,400
Women	400	900	100	1,800	200	1,100	100	2,000
Earth scientists	3,000	8,700	3,000	22,300	1,700	4,500	7,500	11,500
Men	2,600	7,800	2,800	20,600	1,500	3,500	7,400	9,700
Women	300	900	100	1,800	200	900	100	1,900
Oceanographers	(2)	100	200	100	(2)	200	100	(2)
Men	(2)	100	200	100	(2)	100	100	(2)
Women	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	100	400	200	1,400	500	2,200	500	1,800
Men	100	300	200	1,300	500	2,000	500	1,700
Women	(2)	(2)	(2)	(2)	(2)	200	(2)	100
Life scientists	29,300	61,500	14,900	44,000	3,200	13,300	38,800	54,400
Men	23,300	46,700	12,800	34,700	2,400	8,800	33,600	34,600
Women	6,000	14,700	2,100	9,300	800	4,500	5,200	19,900
Biological scientists	22,400	48,400	9,200	22,800	2,300	9,300	27,400	34,500
Men	18,000	36,100	7,600	18,200	1,500	6,300	23,100	21,300
Women	4,300	12,300	1,600	4,600	800	3,000	4,400	13,100
Agricultural scientists	2,500	6,100	5,600	20,100	700	3,800	9,300	16,600
Men	2,400	5,200	5,100	15,600	600	2,300	8,900	11,400
Women	100	900	400	4,600	(2)	1,500	400	5,200
Medical scientists	4,400	7,000	100	1,100	300	300	2,100	3,400
Men	2,900	5,500	100	900	300	200	1,700	1,800
Women	1,600	1,500	100	200	(2)	100	400	1,500
Psychologists	21,600	39,100	1,800	11,000	1,300	5,300	57,700	111,600
Men	14,300	25,900	1,300	7,600	700	2,000	37,300	54,300
Women	7,400	13,200	600	3,400	600	3,300	20,400	57,300
Social scientists	43,400	79,000	12,600	22,500	16,500	39,500	52,900	92,600
Men	34,000	56,800	10,700	16,700	9,800	23,500	34,900	59,900
Women	9,400	22,300	1,900	5,900	6,700	16,000	18,100	32,800

Table 13 cont.

Field and sex	Primary work activity							
	Teaching		Production/ inspection		Reporting, stat work, computing		Other (1)	
	1976	1986	1976	1986	1976	1986	1976	1986
Economists	9,800	23,900	1,300	8,100	7,700	20,800	12,500	36,400
Men	8,500	21,300	1,200	7,600	4,600	14,200	10,900	28,000
Women	1,300	2,600	200	500	3,100	6,600	1,600	8,400
Sociologists/anthropologists	9,600	23,700	600	6,700	3,300	6,400	7,300	19,800
Men	7,300	13,800	500	3,500	2,100	2,900	3,900	10,600
Women	2,300	9,800	100	3,300	1,200	3,500	3,400	9,200
Other social scientists	24,000	31,500	10,700	7,700	5,600	12,200	33,200	36,500
Men	18,200	21,700	9,100	5,600	3,100	6,400	20,100	21,300
Women	5,800	9,800	1,600	2,100	2,400	5,800	13,000	15,200
Total engineers	22,000	56,900	194,500	423,600	37,400	113,200	269,700	314,500
Men	21,900	53,000	191,100	404,600	36,400	103,900	265,800	302,100
Women	200	3,900	3,400	19,000	1,000	9,400	3,900	12,300
Aeronautical/astronautical	1,000	2,900	4,400	11,300	2,200	5,800	4,800	9,400
Men	1,000	2,600	4,300	10,700	2,200	5,400	4,800	9,200
Women	(2)	300	100	600	(2)	400	(2)	200
Chemical	600	3,500	10,300	22,800	1,400	5,000	8,200	16,000
Men	600	3,200	9,000	20,300	1,300	4,300	8,100	15,000
Women	(2)	300	1,300	2,400	100	700	100	1,000
Civil	2,300	6,800	38,400	73,500	6,100	14,400	42,200	72,000
Men	2,200	5,700	38,100	71,300	5,600	13,400	41,000	69,400
Women	100	1,100	300	2,200	400	1,000	1,200	2,600
Electrical/electronics	4,800	14,000	30,200	84,100	6,500	23,100	40,200	45,300
Men	4,800	13,000	30,000	81,900	6,500	21,900	39,600	43,400
Women	(2)	1,000	200	2,200	(2)	1,200	600	1,900
Industrial	NA	3,500	NA	36,700	NA	10,400	NA	14,100
Men	NA	3,400	NA	34,000	NA	9,600	NA	13,500
Women	NA	100	NA	2,700	NA	800	NA	700
Materials	NA	1,600	NA	10,700	NA	800	NA	4,000
Men	NA	1,600	NA	9,900	NA	700	NA	3,800
Women	NA	(2)	NA	800	NA	100	NA	200
Mechanical	5,500	9,300	30,600	72,900	3,200	12,900	35,200	40,800
Men	5,500	9,100	30,000	70,000	3,200	12,300	35,200	39,400
Women	(2)	200	600	2,900	(2)	600	100	1,500
Mining	NA	700	NA	5,900	NA	1,100	NA	2,600
Men	NA	600	NA	5,700	NA	1,000	NA	2,500
Women	NA	(2)	NA	200	NA	100	NA	100
Nuclear	NA	900	NA	6,300	NA	2,000	NA	3,300
Men	NA	900	NA	5,900	NA	1,800	NA	3,200
Women	NA	(2)	NA	300	NA	200	NA	100
Petroleum	NA	200	NA	13,100	NA	1,700	NA	5,100
Men	NA	200	NA	12,400	NA	1,300	NA	4,800
Women	NA	(2)	NA	700	NA	300	NA	300
Other engineers	7,900	13,700	80,700	86,500	18,000	36,000	139,000	101,700
Men	7,900	12,800	79,700	82,500	17,600	32,100	137,000	97,800
Women	(2)	900	900	4,000	400	3,900	1,900	3,800

(1) Includes consulting, other, and no report
(2) Too few cases to estimate
NA = Not available

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 14. Employed doctoral scientists and engineers by field, sex, and primary work activity: 1987

Field and sex	Primary work activity							
	Total	Research and development				Management/admin.		Teaching
		Total	Basic research	Applied research	Develop-ment	Of R & D	Other than R & D	
Total, all fields	419,100	154,300	63,200	72,200	18,900	33,900	47,600	109,700
Men	352,400	133,600	52,100	63,600	17,900	31,400	40,100	90,800
Women	66,700	20,700	11,100	8,600	1,100	2,500	7,500	19,000
Total scientists	351,400	124,700	59,700	55,900	9,100	22,800	39,300	97,900
Men	286,300	104,800	48,800	47,800	8,300	20,600	31,900	79,300
Women	65,000	19,900	11,000	8,100	800	2,200	7,400	18,700
Physical scientists	68,600	34,500	13,200	17,600	3,800	8,200	4,100	15,200
Men	63,200	31,700	12,100	16,200	3,500	7,900	3,900	13,700
Women	5,500	2,800	1,100	1,400	300	300	200	1,500
Chemists	44,100	21,400	6,300	12,300	2,800	5,700	2,800	9,200
Men	39,700	19,200	5,500	11,100	2,600	5,400	2,600	7,900
Women	4,500	2,200	800	1,200	200	300	200	1,300
Physicists/astronomers	24,500	13,100	6,900	5,300	900	2,500	1,300	6,000
Men	23,500	12,500	6,500	5,100	900	2,400	1,300	5,800
Women	1,000	600	300	200	(2)	(2)	(2)	200
Mathematical scientists	16,700	4,000	2,800	1,000	200	300	1,400	9,300
Men	15,100	3,700	2,700	900	100	300	1,300	8,300
Women	1,600	300	200	100	(2)	(2)	100	1,000
Mathematicans	13,900	3,300	2,400	800	100	300	1,200	8,000
Men	12,600	3,100	2,200	700	100	200	1,200	7,200
Women	1,300	200	100	100	(2)	(2)	100	900
Statisticians	2,800	700	400	200	(2)	100	200	1,300
Men	2,500	600	400	200	(2)	(2)	200	1,100
Women	300	100	(2)	100	(2)	(2)	(2)	200
Computer specialists	18,600	6,500	1,400	2,000	3,100	2,300	2,200	2,800
Men	16,700	6,100	1,300	1,900	2,900	2,100	2,000	2,500
Women	1,900	400	100	100	200	200	200	300
Environmental scientists	17,800	7,700	3,600	4,000	100	1,900	3,000	3,400
Men	16,500	7,100	3,200	3,700	100	1,800	2,900	3,100
Women	1,300	600	400	300	(2)	100	200	300
Earth scientists	13,600	5,000	2,100	2,800	100	1,400	2,700	2,900
Men	12,600	4,600	1,900	2,600	100	1,400	2,500	2,700
Women	1,000	400	200	200	(2)	100	200	300
Oceanographers	2,000	1,300	900	400	(2)	200	200	300
Men	1,800	1,100	700	300	(2)	200	200	300
Women	200	200	100	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	2,200	1,400	600	800	(2)	300	200	200
Men	2,100	1,400	600	800	(2)	300	200	200
Women	100	100	(2)	(2)	(2)	(2)	(2)	(2)
Life scientists	107,400	53,100	31,200	20,500	1,400	7,300	10,500	21,700
Men	85,300	42,100	23,900	17,000	1,200	6,500	8,300	16,400
Women	22,100	11,000	7,400	3,500	200	800	2,200	5,300
Biological scientists	62,000	35,500	25,600	9,300	700	3,300	4,600	14,300
Men	48,500	27,400	19,300	7,600	500	2,900	3,800	11,100
Women	13,500	8,100	6,300	1,700	100	400	800	3,200
Agricultural scientists	15,800	7,800	1,300	6,200	300	1,600	1,800	2,400
Men	14,700	7,200	1,200	5,700	300	1,500	1,700	2,200
Women	1,100	600	100	400	(2)	100	100	200
Medical scientists	29,600	9,800	4,400	5,000	400	2,400	4,100	5,100
Men	22,100	7,400	3,400	3,700	400	2,000	2,800	3,100
Women	7,500	2,400	1,000	1,300	100	300	1,300	1,900
Psychologists	56,400	6,500	2,900	3,200	400	1,000	7,300	13,800
Men	37,300	4,300	2,100	1,900	300	700	4,900	9,800
Women	19,100	2,200	800	1,300	100	300	2,300	4,100

See footnotes at end of table.

Table 14 cont.

Field and sex	Primary work activity							
	Total	Research and development				Management/admin.		Teaching
		Total	Basic research	Applied research	Develop-ment	Of R & D	Other than R & D	
Social scientists	65,900	12,400	4,600	7,600	200	1,700	10,700	31,600
Men	52,400	9,900	3,600	6,100	100	1,300	8,700	25,400
Women	13,500	2,500	1,000	1,400	(2)	500	2,100	6,200
Economists	17,800	4,900	1,400	3,500	(2)	400	2,800	7,700
Men	15,800	4,300	1,100	3,100	(2)	300	2,600	6,900
Women	2,000	700	200	400	(2)	100	300	800
Sociologists/anthropologists	12,900	2,200	1,300	900	(2)	300	1,500	7,500
Men	9,000	1,600	900	600	(2)	100	1,000	5,300
Women	3,900	600	400	200	(2)	200	500	2,200
Other social scientists	35,100	5,200	1,900	3,200	100	1,100	6,400	16,400
Men	27,500	4,000	1,500	2,400	100	800	5,100	13,200
Women	7,600	1,200	400	800	(2)	300	1,300	3,200
Total engineers	67,800	29,600	3,500	16,300	9,800	11,100	8,300	11,800
Men	66,000	28,800	3,300	15,800	9,600	10,900	8,200	11,500
Women	1,700	900	200	400	200	200	100	300
Aeronautical/astronautical	5,000	2,400	200	1,100	1,000	1,400	400	400
Men	4,900	2,300	200	1,100	1,000	1,400	400	400
Women	100	100	(2)	(2)	(2)	(2)	(2)	(2)
Chemical	6,900	3,300	500	2,000	800	1,000	600	1,100
Men	6,800	3,200	500	2,000	800	1,000	600	1,100
Women	100	100	(2)	(2)	(2)	(2)	(2)	(2)
Civil	6,500	1,500	300	1,000	200	200	1,700	2,400
Men	6,300	1,400	300	900	200	200	1,600	2,300
Women	200	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Electrical/electronics	12,600	5,700	500	2,300	3,000	2,200	1,200	2,200
Men	12,300	5,500	500	2,200	2,900	2,100	1,200	2,100
Women	400	200	(2)	100	100	100	(2)	100
Materials science	8,100	4,300	700	2,700	1,000	1,600	700	700
Men	7,800	4,100	600	2,600	1,000	1,600	600	700
Women	200	200	(2)	100	(2)	(2)	(2)	(2)
Mechanical	6,700	2,700	200	1,600	800	700	700	2,100
Men	6,600	2,600	200	1,600	800	700	700	2,100
Women	100	100	(2)	(2)	(2)	(2)	(2)	(2)
Nuclear	2,200	1,000	(2)	700	300	400	300	200
Men	2,100	1,000	(2)	700	300	400	300	200
Women	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Systems design	3,900	1,800	100	800	1,000	900	400	400
Men	3,800	1,700	100	800	900	900	400	400
Women	200	100	(2)	(2)	(2)	(2)	(2)	(2)
Other engineers	15,800	7,000	1,100	4,200	1,700	2,600	2,300	2,300
Men	15,400	6,800	1,000	4,100	1,700	2,600	2,300	2,200
Women	400	200	100	100	(2)	(2)	(2)	100

See footnotes at end of table.

Table 14 cont.

Field and sex	Primary work activity				
	Consulting	Sales	Profes-sional services	Reporting, Stat work, Computing	Other (1)
Total, all fields	3,600	5,500	32,600	11,900	20,000
Men	3,500	4,800	22,000	9,800	16,400
Women	100	700	10,600	2,100	3,600
Total scientists	2,100	4,400	32,500	10,500	17,200
Men	2,000	3,700	21,900	8,600	13,700
Women	100	700	10,600	2,000	3,500
Physical scientists	900	1,500	500	1,000	2,800
Men	800	1,400	500	900	2,500
Women	(2)	100	100	100	300
Chemists	700	1,200	400	600	2,100
Men	700	1,100	300	500	1,800
Women	(2)	100	100	100	300
Physicists/astronomers	100	200	200	400	700
Men	100	200	100	300	700
Women	(2)	(2)	(2)	(2)	(2)
Mathematical scientists	(2)	100	(2)	800	700
Men	(2)	100	(2)	700	600
Women	(2)	(2)	(2)	100	100
Mathematicans	(2)	100	(2)	300	600
Men	(2)	100	(2)	200	600
Women	(2)	(2)	(2)	(2)	100
Statisticians	(2)	(2)	(2)	500	100
Men	(2)	(2)	(2)	500	(2)
Women	(2)	(2)	(2)	100	(2)
Computer specialists	100	300	(2)	3,300	1,100
Men	100	300	(2)	2,800	900
Women	(2)	100	(2)	400	200
Environmental scientists	200	100	100	600	700
Men	200	100	100	600	600
Women	(2)	(2)	(2)	100	100
Earth scientists	200	100	100	600	600
Men	200	100	100	500	500
Women	(2)	(2)	(2)	(2)	100
Oceanographers	(2)	(2)	(2)	(2)	(2)
Men	(2)	(2)	(2)	(2)	(2)
Women	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	(2)	(2)	(2)	(2)	100
Men	(2)	(2)	(2)	(2)	100
Women	(2)	(2)	(2)	(2)	(2)
Life scientists	700	900	6,700	1,600	4,800
Men	700	800	5,500	1,100	3,800
Women	(2)	100	1,200	500	1,000
Biological scientists	200	400	900	1,000	1,600
Men	200	400	700	700	1,300
Women	(2)	100	300	300	400
Agricultural scientists	300	300	200	200	1,200
Men	300	300	200	100	1,100
Women	(2)	(2)	(2)	(2)	100
Medical scientists	200	200	5,600	400	2,000
Men	200	100	4,700	300	1,500
Women	(2)	(2)	900	200	500
Psychologists	(2)	400	24,700	600	2,000
Men	(2)	300	15,500	400	1,300
Women	(2)	100	9,200	200	700

See footnotes at end of table.

Table 14 cont.

Field and sex	Primary work activity				
	Consulting	Sales	Profes-sional services	Reporting, Stat work, Computing	Other (1)
Social scientists	100	1,000	500	2,600	5,200
Men	100	800	300	2,000	4,000
Women	(2)	200	200	600	1,200
Economists	(2)	100	100	1,000	800
Men	(2)	100	100	900	700
Women	(2)	100	(2)	100	100
Sociologists/anthropologists	(2)	300	200	200	800
Men	(2)	300	100	100	600
Women	(2)	(2)	100	(2)	300
Other social scientists	100	600	200	1,400	3,600
Men	100	500	100	1,000	2,700
Women	(2)	100	100	400	900
Total engineers	1,500	1,100	100	1,400	2,800
Men	1,500	1,100	100	1,300	2,700
Women	(2)	(2)	(2)	100	100
Aeronautical/astronautical	(2)	(2)	100	100	100
Men	(2)	(2)	100	100	100
Women	(2)	(2)	(2)	(2)	(2)
Chemical	300	300	(2)	100	300
Men	300	300	(2)	100	300
Women	(2)	(2)	(2)	(2)	(2)
Civil	200	100	(2)	100	400
Men	200	100	(2)	(2)	400
Women	(2)	(2)	(2)	(2)	(2)
Electrical/electronics	300	200	(2)	200	500
Men	300	200	(2)	200	500
Women	(2)	(2)	(2)	(2)	(2)
Materials science	300	100	(2)	100	300
Men	300	100	(2)	100	300
Women	(2)	(2)	(2)	(2)	(2)
Mechanical	100	100	(2)	100	200
Men	100	100	(2)	100	200
Women	(2)	(2)	(2)	(2)	(2)
Nuclear	(2)	100	(2)	100	100
Men	(2)	100	(2)	100	100
Women	(2)	(2)	(2)	(2)	(2)
Systems design	100	(2)	(2)	200	(2)
Men	100	(2)	(2)	200	(2)
Women	(2)	(2)	(2)	(2)	(2)
Other engineers	200	300	(2)	400	700
Men	200	300	(2)	400	700
Women	(2)	(2)	(2)	(2)	(2)

(1) Includes production and related activities, other and no report
(2) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 15. Recent science and engineering degree recipients by field, degree level, and primary work activity: 1986
(1984 and 1985 graduates)

Field and degree level	Primary work activity							
	Total (1)	Research and development				Management/administration		
		Total	Basic research	Applied research	Development	Total	Of R & D	Other than R & D
	Bachelor's							
Total, all fields	470,500	102,900	5,900	18,800	78,300	62,700	9,300	53,400
Total scientists	326,200	43,800	5,300	12,700	25,900	47,500	6,500	41,000
Physical scientists	19,200	6,000	600	2,800	2,600	1,200	200	1,100
Chemists	10,700	4,400	500	2,300	1,600	600	100	500
Physicists/astronomers	4,000	1,500	100	500	900	200	(3)	200
Other physical scientists	4,500	100	(3)	(3)	100	400	(3)	400
Mathematical scientists	25,700	3,400	100	900	2,500	1,500	300	1,300
Computer scientists	66,100	15,000	(3)	1,100	13,900	3,800	1,200	2,600
Environmental scientists	9,800	1,800	200	1,200	400	1,100	200	1,000
Life scientists	52,700	9,300	3,300	4,200	1,800	7,400	1,200	6,200
Biological scientists	35,000	7,700	3,200	3,600	1,000	4,400	800	3,600
Agricultural scientists	17,700	1,600	200	700	800	3,100	400	2,700
Psychologists	42,400	1,500	300	800	400	8,500	900	7,600
Social scientists	110,300	6,900	700	1,800	4,400	24,000	2,700	21,300
Economists	39,300	2,700	400	700	1,600	8,000	700	7,300
Sociologists/anthropologists	19,000	600	(3)	300	300	4,700	1,100	3,600
Other social scientists	52,000	3,600	300	800	2,400	11,300	900	10,400
Total engineers	144,300	59,100	600	6,100	52,400	15,200	2,800	12,400
Aeronautical/astronautical	4,600	1,900	(3)	300	1,600	200	100	100
Chemical	10,800	4,300	(3)	400	3,800	1,200	100	1,100
Civil	17,300	3,600	100	400	3,100	2,900	300	2,700
Electrical/electronics	44,100	23,800	100	2,300	21,400	3,200	1,000	2,200
Industrial	9,700	2,400	100	100	2,200	1,500	100	1,400
Materials	2,100	800	(3)	100	700	100	(3)	100
Mechanical	33,100	15,400	100	800	14,500	3,500	800	2,700
Mining	1,800	400	(3)	200	200	100	(3)	100
Nuclear	700	100	(3)	(3)	100	100	(3)	(3)
Petroleum	2,400	300	(3)	100	200	100	(3)	100
Other engineers	17,800	5,900	100	1,200	4,500	2,200	300	1,900
	Master's							
Total, all fields	86,500	32,800	3,000	9,300	20,500	12,500	3,500	9,000
Total scientists	55,900	15,500	2,500	6,000	7,000	9,000	2,400	6,600
Physical scientists	4,000	1,900	400	700	700	400	100	300
Chemists	2,000	1,200	200	500	400	200	100	200
Physicists/astronomers	1,100	600	200	200	200	100	(3)	(3)
Other physical scientists	800	100	100	100	(3)	100	(3)	100
Mathematical scientists	5,800	1,000	100	400	500	900	300	600
Computer scientists	15,900	5,400	200	800	4,400	2,000	900	1,000
Environmental scientists	3,300	1,300	200	700	400	200	100	100
Life scientists	10,200	4,000	1,500	2,000	500	1,200	400	800
Biological scientists	6,700	2,800	1,300	1,300	200	500	200	300
Agricultural scientists	3,500	1,200	200	700	300	700	200	500
Psychologists	3,800	500	(3)	400	100	800	300	500
Social scientists	12,900	1,500	200	1,000	400	3,600	300	3,300
Economists	3,300	500	100	300	200	400	100	300
Sociologists/anthropologists	2,500	300	100	100	100	600	(3)	600
Other social scientists	7,100	700	(3)	600	100	2,600	200	2,500
Total engineers	30,600	17,200	400	3,300	13,500	3,500	1,100	2,400
Aeronautical/astronautical	900	800	100	200	500	(3)	(3)	(3)
Chemical	2,200	1,400	(3)	300	1,100	100	(3)	100
Civil	4,600	1,200	(3)	300	900	800	(3)	800
Electrical/electronics	9,400	7,100	200	1,000	5,900	700	500	200
Industrial	1,500	700	(3)	100	600	300	(3)	300
Materials	900	600	(3)	200	400	100	(3)	(3)
Mechanical	4,800	3,100	100	600	2,400	300	100	200
Mining	300	100	(3)	100	(3)	(3)	(3)	(3)
Nuclear	500	300	(3)	200	100	(3)	(3)	(3)
Petroleum	300	100	(3)	(3)	100	(3)	(3)	(3)
Other engineers	5,100	2,000	(3)	500	1,400	1,000	300	700

Table 15 cont.

Field and degree level	Primary work activity			
	Teaching	Production/ inspection	Reporting/stat work/computing	Other (2)
	Bachelor's			
Total, all fields	30,200	67,100	77,200	130,400
Total scientists	28,100	32,000	67,500	107,100
Physical scientists	2,600	3,800	1,200	4,400
Chemists	500	3,000	300	2,000
Physicists/astronomers	500	700	700	500
Other physical scientists	1,600	200	200	1,900
Mathematical scientists	5,200	1,800	7,300	6,500
Computer scientists	1,000	3,400	36,600	6,300
Environmental scientists	600	2,100	1,000	3,200
Life scientists	5,200	10,000	2,900	17,800
Biological scientists	4,100	5,500	2,000	11,400
Agricultural scientists	1,100	4,600	900	6,400
Psychologists	6,700	2,800	3,800	19,300
Social scientists	6,900	8,200	14,800	49,600
Economists	700	3,800	6,900	17,200
Sociologists/anthropologists	3,300	900	1,500	8,100
Other social scientists	2,900	3,500	6,400	24,300
Total engineers	2,000	35,000	9,600	23,300
Aeronautical/astronautical	100	700	300	1,300
Chemical	200	2,800	700	1,600
Civil	100	4,600	1,000	5,000
Electrical/electronics	500	9,300	3,000	4,300
Industrial	100	3,100	900	1,700
Materials	(3)	900	100	100
Mechanical	400	7,400	2,000	4,400
Mining	(3)	500	200	400
Nuclear	(3)	300	100	100
Petroleum	(3)	1,300	200	500
Other engineers	500	4,300	900	3,900
	Master's			
Total, all fields	9,200	6,600	11,600	13,900
Total scientists	8,500	3,600	9,800	9,600
Physical scientists	900	400	200	300
Chemists	300	200	(3)	100
Physicists/astronomers	200	100	100	200
Other physical scientists	400	100	100	(3)
Mathematical scientists	1,900	300	900	800
Computer scientists	1,300	700	5,200	1,400
Environmental scientists	200	700	400	500
Life scientists	1,400	900	700	2,000
Biological scientists	1,100	500	400	1,400
Agricultural scientists	400	400	300	600
Psychologists	500	100	200	1,700
Social scientists	2,200	500	2,300	2,800
Economists	600	(3)	1,000	700
Sociologists/anthropologists	900	200	200	500
Other social scientists	800	300	1,100	1,600
Total engineers	700	3,000	1,900	4,200
Aeronautical/astronautical	(3)	(3)	(3)	100
Chemical	(3)	300	200	200
Civil	200	800	200	1,300
Electrical/electronics	200	500	400	600
Industrial	(3)	100	100	300
Materials	(3)	100	(3)	(3)
Mechanical	100	500	300	500
Mining	(3)	100	(3)	(3)
Nuclear	(3)	100	(3)	(3)
Petroleum	(3)	200	(3)	(3)
Other engineers	200	400	400	1,100

(1) Exclusive of full-time graduate students
(2) Includes consulting, sales, professional services, other, and no report
(3) Too few cases to estimate
NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 15a. Recent science and engineering doctoral degree recipients by field and primary work activity: 1987 (1985 and 1986 graduates)

Field and degree level	Primary work activity							
	Total	Research and development				Management/admin.		Teaching
		Total	Basic research	Applied research	Development	Of R & D	Other than R & D	
Total, all fields	34,200	18,700	8,600	8,600	1,500	800	1,700	6,600
Total scientists	28,900	15,300	8,100	6,300	800	600	1,500	5,600
Physical scientists	5,100	4,200	2,000	1,900	300	200	(2)	400
Chemists	3,300	2,700	1,100	1,500	200	100	(2)	300
Physicists/astronomers	1,800	1,600	1,000	400	200	100	(2)	100
Mathematical scientists	1,200	500	400	100	(2)	(2)	100	600
Mathematicans	900	400	300	100	(2)	(2)	100	400
Statisticians	300	100	100	(2)	(2)	(2)	(2)	200
Computer specialists	1,300	700	200	300	200	(2)	100	300
Environmental scientists	1,200	700	400	300	(2)	100	(2)	300
Earth scientists	800	500	200	200	(2)	(2)	(2)	200
Oceanographers	200	200	100	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	100	100	(2)	100	(2)	(2)	(2)	(2)
Life scientists	9,500	6,600	4,300	2,300	100	200	400	1,200
Biological scientists	5,800	4,800	3,600	1,100	(2)	100	100	400
Agricultural scientists	1,200	700	200	500	100	(2)	100	200
Medical scientists	2,400	1,100	400	600	(2)	(2)	300	600
Psychologists	5,500	800	300	400	100	100	500	800
Social scientists	5,300	1,700	600	1,100	(2)	100	400	2,100
Economists	1,600	900	400	500	(2)	(2)	(2)	500
Sociologists/anthropologists	800	300	100	200	(2)	(2)	100	300
Other social scientists	2,900	600	100	400	(2)	100	300	1,200
Total engineers	5,300	3,500	500	2,300	700	200	200	1,000
Aeronautical/astronautical	300	200	(2)	100	100	(2)	(2)	(2)
Chemical	700	600	100	400	100	(2)	(2)	100
Civil	400	200	(2)	100	(2)	(2)	100	100
Electrical/electronics	1,200	800	(2)	500	300	(2)	(2)	300
Materials science	700	600	100	400	100	(2)	(2)	100
Mechanical	500	300	100	200	(2)	(2)	(2)	100
Nuclear	100	100	(2)	100	(2)	(2)	(2)	(2)
Systems design	300	100	(2)	100	(2)	100	(2)	(2)
Other engineers	1,100	700	100	500	100	100	(2)	300

Table 15a cont.

Field and degree level	Primary work activity				
	Consulting	Sales	Profes-sional services	Reporting, Stat work, Computing	Other (1)
Total, all fields	100	100	3,600	1,300	1,300
Total scientists	100	100	3,600	1,000	1,100
Physical scientists	(2)	(2)	(2)	(2)	100
Chemists	(2)	(2)	(2)	(2)	(2)
Physicists/astronomers	(2)	(2)	(2)	(2)	(2)
Mathematical scientists	(2)	(2)	(2)	(2)	(2)
Mathematicans	(2)	(2)	(2)	(2)	(2)
Statisticians	(2)	(2)	(2)	(2)	(2)
Computer specialists	(2)	(2)	(2)	100	100
Environmental scientists	(2)	(2)	(2)	(2)	(2)
Earth scientists	(2)	(2)	(2)	(2)	(2)
Oceanographers	(2)	(2)	(2)	(2)	(2)
Atmospheric scientists	(2)	(2)	(2)	(2)	(2)
Life scientists	(2)	(2)	400	200	400
Biological scientists	(2)	(2)	100	100	200
Agricultural scientists	(2)	(2)	100	(2)	100
Medical scientists	(2)	(2)	200	100	100
Psychologists	(2)	(2)	3,100	(2)	300
Social scientists	(2)	(2)	(2)	500	300
Economists	(2)	(2)	(2)	100	100
Sociologists/anthropologists	(2)	(2)	(2)	(2)	(2)
Other social scientists	(2)	(2)	(2)	400	200
Total engineers	(2)	(2)	(2)	200	100
Aeronautical/astronautical	(2)	(2)	(2)	(2)	(2)
Chemical	(2)	(2)	(2)	(2)	(2)
Civil	(2)	(2)	(2)	(2)	(2)
Electrical/electronics	(2)	(2)	(2)	(2)	(2)
Materials science	(2)	(2)	(2)	(2)	(2)
Mechanical	(2)	(2)	(2)	(2)	(2)
Nuclear	(2)	(2)	(2)	(2)	(2)
Systems design	(2)	(2)	(2)	100	(2)
Other engineers	(2)	(2)	(2)	100	(2)

(1) Includes production and related activities, other, and no report
(2) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 16. Employed scientists and engineers by field and age: 1986

Field	Age											
	Total	24 and under	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70 and over	No report
Total, all fields	4,626,500	174,300	765,300	577,500	699,400	638,900	491,700	429,300	407,400	293,200	96,700	38,200	14,600
Total scientists	2,186,300	119,200	450,800	295,500	354,800	313,200	208,700	152,500	151,800	83,400	33,100	14,700	8,500
Physical scientists	288,400	8,800	32,400	29,700	34,100	45,000	39,500	33,500	33,300	21,600	7,500	2,600	400
Chemists	184,700	5,300	21,700	20,300	20,100	29,600	24,000	19,900	22,400	14,100	5,100	1,900	400
Physicists/astronomers	72,600	1,400	6,100	5,800	10,000	10,600	12,200	11,100	7,400	5,500	2,100	400	(1)
Other physical scientists	31,100	2,200	4,500	3,600	4,000	4,900	3,200	2,500	3,500	2,000	300	400	(1)
Mathematical scientists	131,000	6,200	18,600	14,600	20,700	23,600	17,900	9,200	14,000	3,200	1,500	1,000	600
Mathematicians	110,700	5,800	14,800	11,400	16,600	20,500	15,500	8,200	12,800	2,700	1,200	1,000	100
Statisticians	20,300	400	3,700	3,200	4,100	3,100	2,400	1,100	1,200	500	300	(1)	500
Computer specialists	562,600	41,100	127,500	100,500	115,700	80,900	43,100	27,900	15,500	5,700	1,200	500	2,900
Environmental scientists	111,300	2,500	20,800	19,000	16,300	11,900	8,800	11,500	9,500	6,800	2,400	1,700	100
Earth scientists	93,700	1,800	17,600	16,900	13,800	8,600	7,700	9,100	8,500	6,100	1,800	1,600	100
Oceanographers	4,200	(1)	700	400	500	1,200	300	800	100	100	100	100	(1)
Atmospheric scientists	13,500	600	2,500	1,700	2,000	2,000	800	1,700	1,000	600	500	100	(1)
Life scientists	411,800	16,500	88,400	56,100	60,500	52,800	35,700	28,800	36,500	22,100	8,100	5,100	1,300
Biological scientists	273,300	10,600	54,200	36,800	44,100	40,900	25,800	18,000	21,800	11,900	4,100	2,200	1,000
Agricultural scientists	103,300	5,900	34,100	15,000	11,000	6,800	5,600	6,400	9,800	4,800	2,400	1,100	300
Medical scientists	35,200	(1)	100	2,400	5,400	5,000	4,300	4,300	4,900	5,300	1,600	1,800	(1)
Psychologists	253,500	12,100	45,200	29,900	42,900	44,600	26,100	19,300	19,600	8,400	3,500	1,200	700
Social scientists	427,800	32,100	117,900	45,700	64,700	54,500	37,500	22,300	23,400	15,700	9,000	2,600	2,400
Economists	163,600	14,200	43,600	17,700	23,800	19,300	12,800	8,200	10,800	8,300	3,600	500	800
Sociologists/ anthropologists	93,400	3,800	27,200	9,900	13,800	14,100	10,300	4,000	4,400	3,600	1,100	400	800
Other social scientists	170,800	14,000	47,100	18,100	27,100	21,100	14,400	10,200	8,200	3,700	4,400	1,700	800
Total engineers	2,440,100	55,100	314,500	282,000	344,600	325,700	283,000	276,800	255,600	209,800	63,600	23,400	6,100
Aeronautical/astronautical	110,500	2,400	11,800	8,400	9,500	13,600	11,100	18,100	15,600	15,000	4,100	1,000	(1)
Chemical	149,000	4,000	23,800	18,200	18,300	18,800	17,300	14,100	15,400	11,100	5,500	2,100	400
Civil	346,300	6,300	44,500	42,900	50,300	44,400	37,700	40,500	32,700	30,200	10,200	5,700	800
Electrical/electronics	574,500	18,800	81,900	67,400	79,200	73,600	69,700	63,800	64,600	42,100	9,100	3,000	1,300
Industrial	137,700	2,800	16,200	13,400	21,000	22,100	17,200	16,900	12,300	12,500	2,700	400	200
Materials	53,100	900	5,900	5,700	8,000	7,900	7,600	5,700	4,900	5,000	1,400	(1)	100
Mechanical	492,600	10,000	65,900	49,300	65,800	64,200	56,500	54,400	53,300	51,300	15,300	5,800	900
Mining	17,300	200	3,700	3,400	3,700	1,300	500	600	1,800	1,200	700	200	(1)
Nuclear	22,700	1,000	3,800	3,200	4,000	3,300	2,500	1,700	1,300	800	1,100	(1)	100
Petroleum	30,800	900	8,100	5,400	2,500	2,700	2,400	2,800	2,500	2,000	1,000	200	100
Other engineers	505,600	7,800	48,800	64,600	82,300	73,900	60,500	58,100	51,400	38,600	12,300	5,100	2,100

(1) Too few cases to estimate

NOTE: Detail may not add to total because of rounding
SOURCE: National Science Foundation, SRS

Table 17. Employed scientists and engineers by field and doctoral intensity rate: 1986

Field	Percent
Total, all fields	8.7%
Total scientists	15.3%
Physical scientists	23.4%
Chemists	23.7%
Physicists/astronomers	32.7%
Mathematical scientists	12.8%
Mathematicians	12.6%
Statisticians	13.8%
Computer specialists	2.7%
Environmental scientists	15.5%
Earth scientists	14.1%
Oceanographers	46.6%
Atmosperhic scientists	15.8%
Life scientists	24.7%
Biological scientists	21.9%
Agricultural scientists	15.0%
Medical scientists	75.2%
Psychologists	20.6%
Social scientists	15.0%
Economists	11.0%
Sociologists/anthropologists	13.6%
Other social scientists	19.5%
Total engineers	2.7%
Aeronautical/astronautical	3.5%
Chemical	4.8%
Civil	1.8%
Electrical/electronics	2.5%
Mechanical	1.3%
Nuclear	10.5%
Other engineers	3.4%

NOTE: Doctoral intensity is defined as employed doctoral scientists and engineers as a percent of all employed scientists and engineers.

SOURCE: National Science Foundation, SRS

Table 18. Selected market characteristics of scientists and engineers by field, sex, and racial/ethnic group: 1986

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total, all fields (1)	94.5	94.6	93.9	1.5	1.3	2.7	84.7	86.4	75.3	2.6	1.9	6.3	4.1	3.2	8.9
White	94.3	94.4	93.8	1.5	1.3	2.6	84.9	86.4	75.8	2.5	1.9	6.1	3.9	3.1	8.5
Black	97.2	97.6	96.4	3.8	2.8	6.0	76.5	79.1	70.4	5.5	3.7	9.8	9.1	6.4	15.2
Asian	96.3	97.0	93.1	1.8	1.9	1.6	87.7	90.7	72.0	2.2	1.8	4.1	3.9	3.6	5.6
Native American	96.0	95.9	96.8	1.2	1.3	(3)	79.3	80.5	69.4	2.4	1.1	13.1	3.6	2.4	13.1
Hispanic (2)	95.2	96.1	92.1	2.1	2.2	1.7	80.2	83.8	66.4	4.8	2.5	13.4	6.7	4.6	14.9
Total scientists	95.3	95.9	94.0	1.9	1.6	2.7	76.7	78.3	72.3	4.3	3.3	7.0	6.1	4.8	9.5
White	95.2	95.8	93.8	1.8	1.5	2.6	77.1	78.6	73.0	4.2	3.3	6.7	5.9	4.7	9.1
Black	97.0	97.2	96.7	3.7	1.6	6.6	68.8	69.7	67.4	7.5	5.2	10.8	10.9	6.7	16.7
Asian	96.1	97.5	93.2	2.3	2.8	1.1	76.9	81.7	66.3	3.5	3.0	4.6	5.8	5.8	5.7
Native American	96.6	96.7	96.4	2.1	2.7	(3)	68.2	68.5	67.3	5.0	2.1	14.7	7.0	4.8	14.7
Hispanic (2)	94.9	96.5	91.9	3.0	3.8	1.4	67.5	71.0	61.1	8.2	4.0	15.9	10.9	7.6	17.1
Physical scientists	93.6	94.1	90.8	1.4	1.2	3.1	91.9	91.8	92.4	1.9	1.6	3.5	3.3	2.8	6.5
White	93.5	94.0	90.2	1.4	1.1	3.1	91.8	91.6	93.4	1.7	1.5	3.0	3.1	2.7	6.0
Black	98.1	98.4	97.6	2.6	2.0	4.2	87.2	89.3	81.8	4.6	3.1	8.5	7.1	5.0	12.3
Asian	93.0	93.5	91.9	1.2	1.3	.9	94.4	94.8	93.5	2.5	2.2	3.3	3.6	3.4	4.1
Native American	80.7	80.7	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	94.1	97.3	83.1	3.2	1.3	10.7	96.8	96.7	97.4	1.8	1.7	2.6	5.0	3.0	13.0
Chemists	92.8	93.1	90.9	1.5	1.1	3.5	91.5	91.2	92.6	1.9	1.6	3.1	3.4	2.8	6.5
White	92.5	93.0	89.6	1.5	1.1	3.5	91.4	91.0	93.9	1.7	1.5	2.6	3.1	2.6	6.1
Black	99.0	99.5	97.7	3.3	2.6	5.0	86.8	89.0	81.5	4.0	2.7	6.9	7.1	5.2	11.5
Asian	93.7	92.8	95.7	1.1	1.1	1.0	94.9	95.0	94.6	2.6	2.8	2.4	3.7	3.8	3.4
Native American	75.8	75.8	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	91.7	97.0	78.1	3.4	(3)	14.4	96.3	96.4	96.2	3.1	2.9	3.8	6.4	2.9	17.7
Physicists/astronomers	95.1	95.8	86.5	1.1	1.0	1.2	94.1	94.1	93.9	1.2	1.2	1.0	2.2	2.2	2.2
White	95.3	95.9	88.8	1.0	.9	1.3	94.1	94.1	93.8	1.2	1.2	1.1	2.1	2.1	2.4
Black	99.1	100.0	93.5	(3)	(3)	(3)	91.5	90.2	100.0	5.5	6.4	(3)	5.5	6.4	(3)
Asian	89.5	94.5	56.0	1.7	1.8	(3)	92.9	93.0	91.8	.8	.9	(3)	2.5	2.7	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	97.8	97.5	100.0	3.0	3.3	(3)	97.4	97.1	100.0	(3)	(3)	(3)	3.0	3.3	(3)
Other physical scientists	95.1	95.2	94.8	1.9	1.8	2.3	89.1	89.1	89.2	3.3	2.4	8.5	5.2	4.2	10.6
White	95.2	95.3	94.7	2.0	1.9	2.5	89.0	88.7	90.4	3.2	2.5	7.2	5.1	4.3	9.5
Black	89.0	84.2	100.0	(3)	(3)	(3)	84.2	90.8	71.6	9.7	(3)	28.4	9.7	(3)	28.4
Asian	97.5	98.2	94.0	1.1	1.3	(3)	93.5	100.0	59.1	6.5	(3)	40.9	7.5	1.3	40.9
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	1.1	(3)	2.2	98.9	97.9	100.0	(3)	(3)	(3)	1.1	(3)	2.2
Mathematical scientists	94.6	95.4	92.6	1.3	0.8	2.7	79.3	81.3	73.7	3.3	2.0	7.1	4.6	2.8	9.6
White	94.2	95.0	92.1	1.3	.7	2.7	79.0	81.2	73.0	3.1	1.8	6.8	4.3	2.5	9.3
Black	98.4	98.4	98.5	1.2	(3)	3.4	90.0	90.5	89.0	4.2	5.5	1.8	5.4	5.5	5.1
Asian	97.9	98.4	94.8	2.3	2.6	(3)	70.3	69.3	77.0	3.9	3.3	7.5	6.1	5.9	7.5
Native American	100.0	100.0	100.0	(3)	(3)	(3)	39.7	66.7	13.8	44.0	(3)	86.2	44.0	(3)	86.2
Hispanic (2)	97.6	97.7	97.4	.9	1.4	(3)	82.6	92.3	66.7	3.6	1.5	7.0	4.4	2.9	7.0
Mathematicians	94.5	95.4	92.2	1.1	.8	1.8	77.7	79.9	71.7	3.4	1.8	7.8	4.5	2.6	9.5
White	94.1	95.0	91.8	1.0	.8	1.7	77.4	79.9	70.7	3.2	1.5	7.7	4.1	2.2	9.2
Black	98.8	99.1	98.3	1.3	(3)	3.8	89.1	89.8	87.6	4.6	5.9	2.0	5.9	5.9	5.8
Asian	97.5	98.2	92.1	2.8	3.1	(3)	65.3	63.6	78.4	4.8	3.9	11.7	7.4	6.9	11.7
Native American	100.0	100.0	100.0	(3)	(3)	(3)	39.7	66.7	13.8	44.0	(3)	86.2	44.0	(3)	86.2
Hispanic (2)	97.3	97.3	97.2	(3)	(3)	(3)	84.6	92.9	71.7	1.0	1.7	(3)	1.0	1.7	(3)
Statisticians	95.2	95.4	94.6	2.4	.6	7.7	87.8	88.4	86.0	3.0	3.1	2.7	5.3	3.7	10.2
White	94.9	95.2	93.9	2.5	.5	8.8	87.5	87.5	87.6	2.9	3.4	1.1	5.3	3.8	9.9
Black	93.9	88.9	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	100.0	100.0	100.0	(3)	(3)	(3)	93.0	100.0	74.5	(3)	(3)	(3)	(3)	(3)	(3)
Native American	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	8.1	10.8	(3)	64.3	87.5	(3)	26.6	(3)	100.0	32.5	10.8	100.0
Computer specialists	98.5	99.4	96.5	.8	.6	1.6	77.7	77.2	79.0	2.5	2.5	2.5	3.3	3.0	4.0
White	98.6	99.4	96.6	.8	.5	1.6	78.1	77.5	79.6	2.4	2.4	2.2	3.2	3.0	3.8
Black	99.2	100.0	98.0	1.2	.3	2.7	70.1	69.8	70.6	4.2	2.7	6.6	5.4	3.0	9.2
Asian	97.6	99.3	92.6	.6	.5	1.0	76.6	76.9	75.4	2.7	2.5	3.4	3.3	3.0	4.4
Native American	100.0	100.0	100.0	1.9	2.2	(3)	52.4	47.8	75.4	(3)	(3)	(3)	1.9	2.2	(3)
Hispanic (2)	96.4	100.0	89.2	.9	1.3	(3)	65.5	69.9	55.9	5.5	6.6	3.2	6.4	7.8	3.2
Environmental scientists	94.5	94.8	92.1	4.4	3.9	8.3	87.4	88.6	78.6	5.6	4.8	11.5	9.7	8.5	18.8
White	94.4	94.7	91.9	4.5	4.0	8.4	88.5	89.8	78.5	5.5	4.6	11.7	9.7	8.4	19.2
Black	97.5	97.1	100.0	.6	.2	2.8	41.3	31.9	100.0	4.4	5.1	(3)	5.0	5.4	2.8
Asian	97.3	97.1	100.0	2.6	2.9	(3)	89.6	91.2	71.7	8.8	9.7	(3)	11.2	12.2	(3)
Native American	93.8	93.0	100.0	(3)	(3)	(3)	74.2	77.9	50.0	15.5	10.2	50.0	15.5	10.2	50.0
Hispanic (2)	95.0	94.5	100.0	4.8	5.3	(3)	84.5	85.4	76.6	9.0	8.9	9.6	13.3	13.7	9.6
Earth scientists	94.4	94.8	91.6	5.0	4.4	8.8	86.8	88.2	76.6	6.1	5.2	12.6	10.8	9.4	20.3
White	94.2	94.7	91.4	5.1	4.6	8.9	88.0	89.6	76.6	6.0	5.0	12.7	10.8	9.4	20.5
Black	99.4	99.3	100.0	.7	.3	5.9	29.2	23.3	100.0	5.3	5.8	(3)	6.0	6.0	5.9
Asian	97.5	97.3	100.0	1.8	2.0	(3)	90.3	92.8	62.5	7.4	8.1	(3)	9.1	9.9	(3)
Native American	90.4	88.2	100.0	(3)	(3)	(3)	75.1	81.8	50.0	24.9	18.2	50.0	24.9	18.2	50.0
Hispanic (2)	99.3	99.3	100.0	5.3	5.8	(3)	84.0	85.3	69.1	10.0	9.8	11.8	14.8	15.0	11.8

Table 18 cont.

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Oceanographers	92.4	91.2	99.3	0.1	0.1	0.1	97.9	97.9	97.9	0.7	0.5	1.8	0.8	0.6	1.9
White	92.2	90.9	99.2	.1	.1	.2	97.8	97.7	98.2	.6	.4	1.5	.7	.5	1.7
Black	69.6	69.6	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Asian	100.0	100.0	100.0	(3)	(3)	(3)	97.6	97.4	100.0	9.8	10.3	(3)	9.8	10.3	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	56.4	58.5	(3)	3.6	(3)	100.0	3.6	(3)	100.0
Atmospheric scientists	96.0	96.1	95.3	1.5	1.2	5.6	88.8	88.6	92.8	3.5	3.5	3.7	4.9	4.6	9.1
White	95.9	96.0	94.4	1.3	1.1	6.8	88.9	88.8	91.2	3.2	3.1	4.5	4.5	4.2	11.0
Black	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	96.4	96.1	100.0	5.5	6.0	(3)	86.5	85.2	100.0	13.5	14.8	(3)	18.2	19.9	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	63.1	53.6	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Life scientists	93.0	94.1	90.0	2.1	1.7	3.4	82.7	83.2	81.1	4.7	3.1	9.6	6.7	4.7	12.7
White	92.8	93.9	89.5	2.1	1.6	3.4	82.9	83.1	82.1	4.4	3.1	8.5	6.4	4.7	11.6
Black	98.5	98.8	97.9	3.8	1.4	7.4	80.9	83.4	76.9	7.3	3.4	13.7	10.9	4.8	20.1
Asian	94.0	96.1	90.7	2.6	2.1	3.3	85.7	90.4	77.6	7.5	3.2	14.7	9.9	5.2	17.5
Native American	100.0	100.0	100.0	(3)	(3)	(3)	63.3	75.3	41.5	.7	(3)	2.0	.7	(3)	2.0
Hispanic (2)	92.2	94.2	89.5	.8	1.3	(3)	71.3	74.6	66.5	16.2	5.7	31.5	16.9	6.9	31.5
Biological scientists	92.9	94.2	89.5	2.2	1.8	3.2	83.5	84.6	80.4	5.2	3.4	10.1	7.3	5.1	13.0
White	92.6	94.0	88.7	2.2	1.8	3.2	83.8	84.4	82.1	4.7	3.4	8.5	6.7	5.1	11.4
Black	98.7	98.6	99.0	3.1	.2	7.4	80.8	83.8	76.0	6.7	2.8	12.9	9.6	3.0	19.3
Asian	93.0	95.9	89.4	2.4	1.5	3.6	85.9	94.9	73.5	10.5	4.3	19.1	12.6	5.7	22.0
Native American	100.0	100.0	100.0	(3)	(3)	(3)	58.5	98.0	42.4	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	92.7	94.8	90.2	.7	1.2	(3)	72.3	76.4	67.1	14.6	3.6	28.8	15.2	4.7	28.8
Agricultural scientists	93.3	93.7	91.8	2.5	1.8	5.1	78.3	78.1	79.0	5.1	3.4	11.2	7.5	5.2	15.7
White	93.1	93.4	91.8	2.4	1.6	5.2	78.3	78.2	78.5	5.1	3.5	11.3	7.3	5.0	15.9
Black	96.3	100.0	90.1	9.4	9.0	10.2	79.6	81.8	75.7	14.5	9.2	24.3	22.5	17.4	32.1
Asian	96.1	95.9	97.0	3.7	3.3	5.1	77.4	76.6	80.5	.7	.7	.7	4.4	4.0	5.7
Native American	100.0	100.0	100.0	(3)	(3)	(3)	64.7	65.7	(3)	1.5	(3)	100.0	1.5	(3)	100.0
Hispanic (2)	89.9	92.2	85.3	1.2	1.8	(3)	64.8	67.2	59.7	23.0	11.6	47.0	23.9	13.2	47.0
Medical scientists	93.9	94.9	90.2	.4	.5	(3)	89.5	88.3	94.3	.1	.1	(3)	.5	.6	(3)
White	93.7	94.6	90.0	.4	.4	(3)	89.0	87.9	93.5	(3)	(3)	(3)	.4	4	(3)
Black	100.0	100.0	100.0	(3)	(3)	(3)	86.4	80.5	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	96.5	97.8	94.3	1.9	3.0	(3)	96.7	94.6	100.0	1.4	2.3	(3)	3.3	5.2	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Psychologists	95.1	94.9	95.3	2.5	2.2	3.0	68.2	71.9	63.6	5.7	4.7	6.8	8.1	6.8	9.6
White	95.0	94.7	95.4	2.3	1.8	3.0	69.1	71.7	65.7	5.8	4.8	7.0	8.0	6.6	9.8
Black	94.5	97.0	93.3	3.6	1.5	4.6	66.6	80.4	59.3	4.9	(3)	7.5	8.3	1.5	11.7
Asian	99.0	100.0	98.8	4.3	23.0	(3)	28.0	95.2	16.2	(3)	(3)	(3)	4.3	23.0	(3)
Native American	100.0	100.0	100.0	8.5	11.2	(3)	94.3	92.3	100.0	11.5	(3)	44.6	19.1	11.2	44.6
Hispanic (2)	96.1	96.3	95.9	4.3	4.8	3.8	46.3	40.9	51.0	7.1	5.3	8.7	11.1	9.8	12.2
Social scientists	95.4	95.8	94.5	2.4	2.3	2.7	60.7	61.9	58.3	7.2	5.4	11.1	9.4	7.5	13.6
White	95.3	95.8	94.3	2.0	2.0	2.1	61.1	62.3	58.1	6.9	5.2	10.9	8.8	7.1	12.8
Black	95.0	93.7	96.8	6.8	3.4	11.3	53.8	50.8	58.2	13.2	9.8	18.0	19.0	12.8	27.3
Asian	96.1	97.8	92.9	6.4	9.6	(3)	68.4	74.7	57.0	3.0	4.3	.5	9.2	13.5	.5
Native American	95.0	100.0	81.1	(3)	(3)	(3)	49.0	34.0	100.0	7.5	9.7	(3)	7.5	9.7	(3)
Hispanic (2)	95.0	95.6	93.8	5.8	8.7	(3)	57.6	57.9	56.9	7.7	.6	20.9	13.1	9.2	20.9
Economists	95.5	95.4	95.9	3.1	3.4	2.0	61.3	60.7	63.9	5.6	4.2	11.1	8.5	7.5	12.8
White	95.4	95.2	96.3	2.6	2.7	2.3	61.3	60.8	63.9	5.0	3.6	11.5	7.5	6.2	13.6
Black	100.0	100.0	100.0	7.0	10.6	(3)	68.6	64.8	75.4	19.9	19.6	20.5	25.5	28.1	20.5
Asian	92.4	95.3	87.2	12.4	18.9	(3)	56.5	64.0	44.8	6.5	10.7	(3)	18.1	27.6	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	39.6	39.6	(3)	12.5	12.5	(3)	12.5	12.5	(3)
Hispanic (2)	99.5	99.3	100.0	2.2	2.8	(3)	64.9	57.4	90.3	.3	.4	(3)	2.5	3.2	(3)
Sociologists/anthropologists	95.3	96.6	93.9	2.2	.9	3.5	61.2	69.5	52.3	9.2	6.4	12.1	11.1	7.3	15.2
White	94.8	96.1	93.6	1.8	.8	2.8	62.0	71.9	51.8	9.2	5.8	12.7	10.8	6.5	15.1
Black	97.6	99.1	96.0	5.6	(3)	12.3	52.6	46.7	60.7	13.6	11.9	15.8	18.4	11.9	26.1
Asian	99.2	100.0	98.2	2.4	4.2	(3)	75.0	89.3	56.3	.6	(3)	1.4	3.0	4.2	1.4
Native American	80.4	100.0	62.8	(3)	(3)	(3)	52.8	19.8	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	.7	.9	(3)	53.9	56.4	46.3	(3)	(3)	(3)	.7	.9	(3)
Other social scientists	95.4	96.0	94.3	1.8	1.5	2.5	59.9	60.0	59.8	7.7	6.3	10.4	[illegible]	7.7	12.7
White	95.5	96.4	93.9	1.5	1.6	1.5	60.3	60.5	59.9	7.6	6.8	9.3	[illegible]	8.3	10.6
Black	90.8	86.7	96.2	7.6	1.5	14.7	47.1	46.0	48.6	9.4	2.6	18.7	[illegible]	4.0	30.7
Asian	100.0	100.0	100.0	(3)	(3)	(3)	80.2	76.0	96.6	(3)	(3)	(3)	(3)	(3)	(3)
Native American	100.0	100.0	100.0	(3)	(3)	(3)	75.2	(3)	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	85.1	81.4	88.2	16.6	37.5	(3)	55.2	65.2	50.3	29.2	3.5	42.0	41.0	39.7	42.0
Total engineers	93.8	93.8	93.7	1.2	1.2	2.5	91.9	91.9	93.5	1.0	1.0	2.3	2.2	2.1	4.8
White	93.5	93.5	93.6	1.2	1.1	2.5	91.8	91.7	93.5	1.0	.9	2.4	2.1	2.0	4.9
Black	97.7	98.0	94.8	4.0	4.2	2.0	90.3	90.2	90.9	2.0	1.9	2.3	5.8	6.0	4.3
Asian	96.5	96.7	93.0	1.5	1.4	3.7	95.4	95.4	94.7	1.2	1.1	1.9	2.7	2.5	5.5
Native American	95.6	95.5	100.0	.4	.4	(3)	87.8	87.8	87.5	.4	.5	(3)	.9	.9	(3)
Hispanic (2)	95.6	95.8	93.4	1.2	1.0	3.2	92.6	92.5	93.5	1.4	1.5	.8	2.6	2.5	4.0

Table 18 cont.

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Aeronautical/astronautical	94.7	94.5	98.7	0.4	0.4	1.3	94.3	94.4	91.1	0.6	0.5	3.5	1.0	0.9	4.8
White	94.3	94.1	98.6	.5	.4	1.4	94.2	94.3	91.0	.4	.3	3.1	.9	.7	4.5
Black	100.0	100.0	100.0	(3)	(3)	(3)	86.4	87.3	75.7	7.6	6.3	24.3	7.6	6.3	24.3
Asian	99.6	99.6	100.0	(3)	(3)	(3)	98.2	98.1	100.0	.8	.8	(3)	.8	.8	(3)
Native American	86.7	86.7	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	92.9	92.5	100.0	6.0	6.4	(3)	6.0	6.4	(3)
Chemical	89.1	89.1	89.8	2.6	2.5	4.1	88.3	87.9	92.5	1.9	1.8	3.0	4.5	4.3	6.9
White	88.6	88.6	89.1	2.6	2.5	3.6	89.1	88.7	94.0	1.8	1.8	2.3	4.3	4.2	5.8
Black	99.0	100.0	94.3	1.9	.9	6.6	43.6	40.7	59.0	6.2	3.4	21.0	8.0	4.3	26.2
Asian	95.8	96.1	93.5	4.2	3.7	8.6	91.3	91.9	86.3	1.7	1.4	4.2	5.9	5.1	12.5
Native American	74.9	74.1	100.0	(3)	(3)	(3)	10.9	7.1	100.0	6.8	7.1	(3)	6.8	7.1	(3)
Hispanic (2)	99.7	99.6	100.0	6.8	7.7	2.2	92.0	93.8	83.7	.6	.7	(3)	7.3	8.4	2.2
Civil	92.3	92.2	95.0	1.7	1.6	3.6	92.1	92.1	92.4	1.2	1.0	6.4	2.9	2.6	9.7
White	92.1	92.0	94.7	1.3	1.3	3.2	92.1	92.1	91.4	1.3	1.0	7.1	2.6	2.3	10.0
Black	98.3	98.6	90.4	17.2	17.7	5.7	91.7	91.3	100.0	1.3	1.2	2.4	18.2	18.6	8.0
Asian	93.3	93.1	97.9	1.3	1.1	6.3	95.2	95.0	100.0	.7	.7	(3)	1.9	1.8	6.3
Native American	97.9	97.9	(3)	(3)	(3)	(3)	95.7	95.7	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	92.2	92.5	87.9	2.0	.7	20.9	97.3	97.2	100.0	1.7	1.8	(3)	3.6	2.5	20.9
Electrical/electronics	93.5	93.7	89.9	1.1	1.1	1.1	94.1	94.2	92.9	.8	.8	.3	1.8	1.8	1.4
White	93.2	93.3	90.9	1.0	1.0	.7	94.1	94.1	92.7	.7	.8	(3)	1.7	1.8	.7
Black	96.1	97.5	73.2	3.1	3.3	(3)	92.1	91.8	100.0	2.0	2.1	(3)	5.1	5.3	(3)
Asian	96.5	97.3	85.5	1.3	1.1	4.5	95.1	95.3	92.7	.7	.6	2.8	2.0	1.7	7.1
Native American	94.6	94.6	(3)	(3)	(3)	(3)	90.4	90.4	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	94.5	95.0	84.9	1.4	1.5	(3)	93.4	94.0	80.1	.3	.3	(3)	1.7	1.8	(3)
Industrial	96.1	96.0	97.0	1.1	1.1	1.4	82.2	81.6	91.5	1.2	1.1	3.0	2.3	2.2	4.4
White	95.8	95.8	96.7	1.1	1.1	1.6	81.3	80.8	91.1	1.1	1.0	2.8	2.2	2.1	4.3
Black	100.0	100.0	100.0	1.9	2.4	(3)	93.4	91.7	100.0	4.9	6.2	(3)	6.7	8.4	(3)
Asian	100.0	100.0	100.0	1.5	1.6	(3)	96.5	97.4	81.3	1.1	(3)	18.7	2.6	1.6	18.7
Native American	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	95.0	95.9	74.0	(3)	(3)	(3)	93.1	92.9	100.0	4.0	4.2	(3)	4.0	4.2	(3)
Materials	94.0	94.1	92.6	1.7	.7	17.5	88.3	88.1	91.9	.9	.9	.8	2.6	1.6	18.1
White	93.8	93.8	93.2	1.7	.7	20.6	87.8	87.3	99.0	.8	.8	1.0	2.4	1.4	21.4
Black	99.0	100.0	97.1	.3	.5	(3)	72.4	100.0	16.1	(3)	(3)	(3)	.3	.5	(3)
Asian	95.6	97.0	77.0	2.3	2.0	6.9	97.1	97.0	100.0	3.4	3.6	(3)	5.6	5.5	6.9
Native American	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	96.3	93.3	100.0	.5	1.0	(3)	96.1	92.8	100.0	(3)	(3)	(3)	.5	1.0	(3)
Mechanical	91.2	91.1	93.2	1.3	1.3	2.5	92.1	92.0	96.5	1.1	1.1	1.8	2.4	2.4	4.3
White	90.7	90.7	92.5	1.3	1.3	2.5	91.9	91.8	96.6	1.0	1.0	1.9	2.3	2.3	4.3
Black	97.4	97.1	100.0	1.2	.6	6.4	95.6	95.9	93.0	.6	.7	(3)	1.8	1.2	6.4
Asian	97.1	97.0	100.0	1.8	1.9	(3)	95.3	95.2	100.0	2.5	2.5	(3)	4.2	4.3	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	89.0	89.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	94.7	94.6	100.0	.2	.2	(3)	87.3	87.2	90.3	1.4	1.2	9.7	1.6	1.3	9.7
Mining	93.7	93.6	95.8	2.2	2.2	1.0	86.1	85.6	97.5	1.6	1.6	.7	3.8	3.8	1.8
White	94.0	94.0	95.5	2.2	2.2	1.1	85.7	85.2	97.3	1.6	1.6	.8	3.7	3.8	1.9
Black	4.8	4.8	(3)	(3)	(3)	(3)	(3)	(3)	(3)	100.0	100.0	(3)	100.0	100.0	(3)
Asian	97.9	97.9	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Native American	100.0	100.0	(3)	64.3	64.3	(3)	100.0	100.0	(3)	(3)	(3)	(3)	64.3	64.3	(3)
Hispanic (2)	100.0	100.0	100.0	6.9	9.6	(3)	100.0	100.0	100.0	(3)	(3)	(3)	6.9	9.6	(3)
Nuclear	98.0	98.1	93.4	1.0	1.0	1.4	97.5	97.5	98.1	.4	.3	.5	1.4	1.4	1.9
White	97.9	98.1	93.1	1.0	1.0	.8	97.4	97.4	97.9	.3	.3	.6	1.3	1.3	1.4
Black	98.9	98.8	100.0	1.4	(3)	17.2	100.0	100.0	100.0	(3)	(3)	(3)	1.4	(3)	17.2
Asian	98.7	98.9	76.9	.5	.5	(3)	99.2	99.2	100.0	.6	.6	(3)	1.1	1.1	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	95.7	100.0	81.0	2.2	2.7	(3)	85.2	81.7	100.0	2.3	2.8	(3)	4.4	5.5	(3)
Petroleum	95.3	95.3	95.2	3.4	3.2	6.9	92.9	93.5	84.4	2.0	1.9	4.5	5.4	5.0	11.1
White	95.6	95.6	96.0	3.0	2.7	7.6	92.7	93.0	86.4	2.2	2.0	5.0	5.1	4.6	12.2
Black	98.2	98.1	100.0	5.5	5.9	(3)	92.2	100.0	(3)	(3)	(3)	(3)	5.5	5.9	(3)
Asian	72.5	68.5	83.3	5.5	7.9	(3)	90.1	100.0	70.0	(3)	(3)	(3)	5.5	7.9	(3)
Native American	92.0	91.9	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	87.1	85.9	100.0	1.4	1.6	(3)	98.7	98.6	100.0	1.3	1.4	(3)	2.7	3.0	(3)
Other engineers	98.3	98.4	96.3	.7	.6	.9	92.7	92.6	94.9	.8	.8	1.5	1.5	1.4	2.4
White	98.2	98.3	96.0	.6	.5	.9	92.4	92.4	94.2	.8	.8	1.8	1.4	1.3	2.7
Black	99.2	99.0	100.0	.4	.5	(3)	93.7	92.3	100.0	.9	1.1	(3)	1.3	1.6	(3)
Asian	99.2	99.3	98.2	.7	.6	1.2	96.5	96.3	98.7	.8	.9	(3)	1.5	1.5	1.2
Native American	100.0	100.0	100.0	1.6	1.7	(3)	94.4	95.4	72.9	(3)	(3)	(3)	1.6	1.7	(3)
Hispanic (2)	99.1	99.5	95.8	(3)	(3)	(3)	92.3	91.4	100.0	1.6	1.7	(3)	1.6	1.8	(3)

(1) Detail will not add to total because
a) racial and ethnic groups are not mutually exclusive and
b) total includes other and no report
(2) Includes members of all racial groups
(3) Too few cases to estimate

NOTE: See Technical Notes for definitions of market rates
SOURCE: National Science Foundation, SRS

Table 19. Selected market characteristics of doctoral scientists and engineers by field, sex, and racial/ethnic group: 1987

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total, all fields (1)	93.8	94.1	92.8	1.1	0.9	2.0	90.1	90.6	87.5	1.4	1.0	3.5	2.5	1.9	5.4
White	93.4	93.6	92.5	1.0	.8	1.9	90.0	90.4	87.7	1.5	1.1	3.5	2.5	1.9	5.4
Black	97.0	97.7	95.3	2.0	2.7	.5	84.6	87.9	76.8	2.6	2.3	3.4	4.6	4.8	3.9
Asian	98.2	98.7	95.1	1.3	.9	3.8	92.9	93.2	90.4	1.0	.7	2.7	2.2	1.7	6.4
Native American	96.1	97.1	92.4	3.0	3.2	2.5	94.3	97.2	84.0	2.4	2.1	3.4	5.3	5.2	5.7
Hispanic (2)	97.4	97.5	96.7	.9	.6	2.2	90.5	91.9	83.5	1.2	.5	4.4	2.0	1.1	6.6
Total scientists	93.5	93.7	92.7	1.2	1.0	2.0	89.6	90.1	87.3	1.6	1.2	3.5	2.7	2.1	5.5
White	93.1	93.3	92.4	1.1	.9	1.9	89.5	89.9	87.5	1.6	1.2	3.6	2.7	2.1	5.4
Black	96.7	97.4	95.3	2.2	3.1	.5	83.3	86.7	76.2	2.9	2.6	3.4	5.0	5.6	3.9
Asian	97.8	98.4	95.0	1.6	1.1	3.9	92.6	93.2	89.8	1.0	.6	2.9	2.6	1.7	6.6
Native American	96.0	96.9	92.7	3.2	3.4	2.6	94.1	97.2	83.0	2.5	2.3	3.6	5.7	5.6	6.1
Hispanic (2)	97.7	98.0	96.6	.9	.5	2.3	90.9	92.9	83.1	1.3	.6	4.4	2.2	1.0	6.6
Physical scientists	91.9	92.0	90.1	1.4	1.2	3.0	90.5	90.6	88.8	.8	.7	1.6	2.2	2.0	4.5
White	91.1	91.2	89.0	1.1	1.0	1.8	90.1	90.2	87.9	.8	.7	1.7	1.9	1.8	3.4
Black	99.3	99.7	96.2	6.5	7.3	(3)	94.8	95.4	90.7	2.7	2.8	2.7	9.0	9.9	2.7
Asian	98.7	99.4	94.4	2.5	1.4	9.0	93.6	93.6	93.7	.8	.7	1.2	3.2	2.1	10.1
Native American	100.0	100.0	100.0	4.0	4.1	(3)	100.0	100.0	100.0	(3)	(3)	(3)	4.0	4.1	(3)
Hispanic (2)	95.4	95.7	93.4	.4	.2	1.4	94.2	94.6	91.4	.8	.9	(3)	1.2	1.1	1.4
Chemists	90.8	90.9	89.8	1.6	1.4	2.9	90.4	90.6	88.6	.8	.7	1.6	2.4	2.1	4.4
White	89.7	89.8	88.7	1.3	1.3	1.5	90.1	90.4	87.4	.7	.6	1.7	2.1	1.9	3.2
Black	99.4	100.0	95.7	7.6	8.8	(3)	96.7	97.6	91.0	2.9	2.9	3.0	10.3	11.4	3.0
Asian	98.9	99.7	94.5	2.0	.5	9.7	92.3	91.8	94.9	1.1	1.0	1.3	3.0	1.6	10.8
Native American	100.0	100.0	100.0	6.3	6.7	(3)	100.0	100.0	100.0	(3)	(3)	(3)	6.3	6.7	(3)
Hispanic (2)	93.4	93.3	93.8	.6	.4	1.7	91.7	92.1	89.9	1.2	1.4	(3)	1.8	1.8	1.7
Physicists/astronomers	93.9	94.1	91.4	1.0	.9	3.3	90.6	90.6	89.9	.9	.8	1.6	1.8	1.7	4.9
White	93.6	93.7	90.7	.6	.6	2.7	89.9	89.9	90.3	.9	.9	1.7	1.6	1.5	4.4
Black	98.6	98.5	100.0	2.1	2.3	(3)	88.3	88.4	87.5	2.2	2.3	(3)	4.3	4.5	(3)
Asian	98.3	98.8	93.8	3.5	3.3	6.1	96.6	97.4	89.2	.1	(3)	1.1	3.6	3.3	7.1
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	99.4	100.0	90.9	(3)	(3)	(3)	98.9	98.8	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Mathematical scientists	94.8	95.2	91.7	1.0	.9	1.6	89.7	89.7	89.4	.4	.3	1.8	1.4	1.2	3.5
White	94.5	94.9	90.8	1.1	1.0	1.5	89.5	89.6	89.3	.5	.3	2.2	1.5	1.3	3.6
Black	100.0	100.0	100.0	1.8	(3)	8.6	93.4	93.3	93.8	(3)	(3)	(3)	1.8	(3)	8.6
Asian	97.1	97.2	96.2	.2	(3)	1.5	91.1	91.5	88.6	(3)	(3)	(3)	.2	(3)	1.5
Native American	100.0	100.0	100.0	0.0	0.0	0.0	100.0	100.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Hispanic (2)	99.3	100.0	94.4	1.1	(3)	8.8	87.6	87.7	87.1	(3)	(3)	(3)	1.1	(3)	8.8
Mathematicans	94.8	95.2	90.9	1.0	.9	2.0	88.6	88.6	89.2	.4	.3	1.0	1.4	1.2	3.0
White	94.6	95.1	90.1	1.1	1.0	1.8	88.5	88.5	88.5	.4	.3	1.2	1.5	1.4	3.0
Black	100.0	100.0	100.0	2.0	(3)	10.0	94.5	95.0	92.6	(3)	(3)	(3)	2.0	(3)	10.0
Asian	95.8	95.8	95.8	.3	(3)	2.2	89.0	88.2	94.0	(3)	(3)	(3)	.3	(3)	2.2
Native American	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	99.2	100.0	94.1	1.2	(3)	9.4	86.1	86.1	86.2	(3)	(3)	(3)	1.2	(3)	9.4
Statisticians	95.0	95.0	94.9	.7	.8	(3)	95.5	96.2	89.8	.6	(3)	5.1	1.3	.8	5.1
White	94.0	93.9	94.1	.9	1.0	(3)	95.6	95.9	92.6	.7	(3)	6.6	1.6	1.0	6.6
Black	100.0	100.0	100.0	(3)	(3)	(3)	85.0	80.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	99.6	100.0	97.1	(3)	(3)	(3)	95.3	98.1	77.9	(3)	(3)	(3)	(3)	(3)	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Computer specialists	99.8	100.0	98.6	.1	.1	.2	99.0	99.0	98.5	.8	.7	1.1	.9	.8	1.3
White	99.8	100.0	98.4	.1	.1	.2	98.8	98.9	98.3	.8	.8	1.3	1.0	.9	1.5
Black	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	4.5	4.7	(3)	4.5	4.7	(3)
Asian	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Native American	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	1.2	1.3	(3)	1.2	1.3	(3)
Environmental scientists	94.7	94.9	92.7	.9	.8	3.0	95.7	95.8	95.2	1.0	.7	4.8	1.9	1.4	7.7
White	94.7	94.9	92.3	.8	.7	2.8	95.5	95.5	94.9	1.0	.7	5.3	1.8	1.4	7.9
Black	99.1	100.0	84.6	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	96.6	96.2	100.0	1.7	1.5	3.0	99.3	99.5	96.9	(3)	(3)	(3)	1.7	1.5	3.0
Native American	100.0	100.0	100.0	15.0	(3)	75.0	100.0	100.0	100.0	(3)	(3)	(3)	15.0	(3)	75.0
Hispanic (2)	100.0	100.0	100.0	4.7	4.0	12.0	97.9	98.5	90.9	.7	.8	(3)	5.3	4.7	12.0
Earth scientists	93.8	94.0	91.7	1.2	1.0	3.5	95.8	95.9	94.7	1.1	.8	5.7	2.3	1.8	9.0
White	93.8	94.0	91.3	1.1	.9	3.5	95.5	95.6	94.5	1.2	.8	6.3	2.3	1.7	9.5
Black	98.9	100.0	84.6	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	96.9	96.6	100.0	1.7	1.8	(3)	99.3	99.7	95.8	(3)	(3)	(3)	1.7	1.8	(3)
Native American	100.0	100.0	100.0	16.7	(3)	75.0	100.0	100.0	100.0	(3)	(3)	(3)	16.7	(3)	75.0
Hispanic (2)	100.0	100.0	100.0	6.4	5.4	23.1	99.5	99.5	100.0	(3)	(3)	(3)	6.4	5.4	23.1

See footnotes at end of table.

Table 19 cont.

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Oceanographers	97.3	97.5	96.3	.1	(3)	.8	94.8	94.7	96.2	.4	.1	3.0	.5	.1	3.8
White	97.6	97.8	96.1	0.1	0.0	0.9	94.7	94.5	95.9	0.5	0.1	3.2	0.6	0.1	4.1
Black	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Asian	91.7	90.4	100.0	(3)	(3)	(3)	98.0	97.6	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Native American	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	94.4	93.2	100.0	3.7	4.5	(3)	3.7	4.5	(3)
Atmospheric scientists	98.0	98.2	94.7	.1	(3)	3.3	96.1	96.1	97.7	.4	.4	(3)	.5	.4	3.3
White	97.9	98.1	93.8	(3)	(3)	(3)	96.0	95.9	97.4	.4	.5	(3)	.4	.5	(3)
Black	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Asian	100.0	100.0	100.0	3.8	(3)	21.4	100.0	100.0	100.0	(3)	(3)	(3)	3.8	(3)	21.4
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	93.1	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Life scientists	92.7	93.0	91.3	1.4	1.1	2.3	93.3	93.9	91.3	1.4	1.0	2.9	2.8	2.1	5.1
White	92.3	92.7	91.0	1.4	1.1	2.4	93.2	93.7	91.3	1.4	1.0	3.0	2.8	2.1	5.3
Black	94.9	95.9	92.9	2.7	4.1	(3)	87.1	90.6	80.7	3.2	3.4	2.7	5.7	7.3	2.7
Asian	97.0	97.9	94.0	1.1	.7	2.4	96.0	96.6	94.1	1.0	.6	2.0	2.0	1.4	4.4
Native American	89.5	91.4	86.0	1.6	2.4	(3)	92.1	92.8	90.7	4.0	4.8	2.3	5.5	7.1	2.3
Hispanic (2)	97.6	97.5	97.9	.8	.3	2.7	95.5	97.1	89.2	1.5	.3	6.2	2.3	.6	8.7
Biological scientists	91.7	92.4	89.5	1.7	1.4	2.9	92.4	92.9	90.6	1.7	1.3	3.1	3.3	2.6	5.9
White	91.4	92.0	89.0	1.8	1.5	3.0	92.3	92.8	90.4	1.7	1.3	3.3	3.5	2.8	6.2
Black	94.1	96.6	88.9	(3)	(3)	(3)	85.3	87.9	79.3	3.0	2.8	3.5	3.0	2.8	3.5
Asian	96.9	97.8	94.7	.9	.2	2.5	95.9	96.6	94.2	.8	.4	1.7	1.6	.6	4.2
Native American	77.3	78.9	75.0	(3)	(3)	(3)	90.2	86.7	95.2	7.8	13.3	(3)	7.8	13.3	(3)
Hispanic (2)	98.2	98.7	96.5	1.1	.7	2.4	96.1	98.3	88.3	.9	(3)	4.3	2.0	.7	6.6
Agricultural scientists	90.0	89.9	91.8	1.6	1.5	3.1	94.1	94.2	92.2	.8	.6	3.3	2.3	2.0	6.3
White	89.9	89.7	92.6	1.2	1.1	2.4	94.2	94.3	93.3	.6	.4	3.2	1.8	1.5	5.6
Black	88.4	87.1	100.0	13.7	15.5	(3)	91.0	96.0	60.0	3.4	2.4	10.0	16.7	17.6	10.0
Asian	93.5	94.7	83.5	4.8	4.3	9.9	91.2	91.5	87.9	2.8	2.7	3.3	7.5	6.9	12.9
Native American	100.0	100.0	100.0	5.6	5.9	(3)	100.0	100.0	100.0	(3)	(3)	(3)	5.6	5.9	(3)
Hispanic (2)	100.0	100.0	100.0	.8	(3)	7.1	96.6	96.7	94.9	.3	(3)	2.6	1.1	(3)	9.5
Medical scientists	96.3	96.9	94.6	.5	.3	1.1	94.9	95.7	92.5	1.2	.8	2.5	1.7	1.1	3.6
White	96.0	96.6	94.5	.5	.3	1.2	94.7	95.4	92.7	1.2	.8	2.5	1.8	1.1	3.7
Black	98.6	100.0	97.1	3.4	6.4	(3)	89.0	93.9	83.9	3.3	5.3	1.3	6.6	11.4	1.3
Asian	98.6	99.5	94.8	.1	(3)	.4	98.1	98.8	95.0	.6	.1	2.6	.7	.1	3.0
Native American	100.0	100.0	100.0	0.0	0.0	0.0	87.8	90.5	85.0	2.4	0.0	5.0	2.4	0.0	5.0
Hispanic (2)	94.6	92.9	99.2	.5	(3)	1.6	93.4	95.3	88.5	3.7	1.3	9.8	4.1	1.3	11.3
Psychologists	95.6	95.8	95.1	.7	.6	1.0	90.1	90.0	90.4	1.7	1.2	2.6	2.4	1.8	3.5
White	95.4	95.7	95.0	.6	.5	1.0	90.3	90.0	91.0	1.6	1.2	2.5	2.3	1.7	3.5
Black	97.6	98.3	97.0	.2	.3	.1	83.9	89.0	79.4	3.0	2.2	3.7	3.2	2.5	3.8
Asian	98.3	100.0	96.2	1.4	.6	2.3	83.4	85.7	80.5	2.4	3.5	1.1	3.8	4.1	3.4
Native American	98.3	100.0	94.6	(3)	(3)	(3)	94.7	100.0	82.9	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	96.1	96.2	96.0	(3)	(3)	(3)	89.0	95.5	78.4	2.6	.6	5.7	2.6	.6	5.7
Social scientists	92.4	92.5	92.1	1.4	1.0	2.9	77.8	78.9	73.4	3.4	2.5	7.1	4.7	3.4	9.7
White	92.1	92.1	91.8	1.3	.8	2.9	77.8	78.8	73.9	3.5	2.6	7.0	4.7	3.4	9.6
Black	95.8	96.0	95.2	2.3	2.9	1.1	70.7	73.5	64.4	3.0	2.5	4.2	5.2	5.2	5.2
Asian	97.2	97.5	95.4	2.5	2.3	3.5	80.2	81.9	69.7	2.5	.8	12.9	4.9	3.0	16.0
Native American	96.7	96.1	100.0	5.4	6.6	(3)	90.0	95.6	65.4	5.7	4.4	11.5	10.8	10.7	11.5
Hispanic (2)	99.4	100.0	97.1	1.2	.5	4.0	81.6	83.1	75.5	1.0	.4	3.8	2.2	.9	7.7
Economists	91.7	91.5	92.9	.6	.5	1.7	82.7	82.4	85.0	.3	.2	.9	.9	.7	2.6
White	91.3	91.1	93.2	.5	.4	1.2	82.4	82.0	85.9	.3	.2	1.0	.8	.6	2.2
Black	88.8	89.9	82.4	3.2	3.7	(3)	76.3	75.6	81.0	(3)	(3)	(3)	3.2	3.7	(3)
Asian	98.4	99.2	91.9	1.0	.6	5.1	86.8	88.0	75.4	.9	1.0	(3)	2.0	1.6	5.1
Native American	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	99.0	100.0	92.1	(3)	(3)	(3)	87.5	87.4	87.9	(3)	(3)	(3)	(3)	(3)	(3)
Sociologists/anthropologists	90.4	90.5	90.0	2.8	1.3	5.9	75.5	76.6	73.0	7.9	6.4	11.4	10.5	7.7	16.6
White	90.2	90.4	89.9	2.7	1.2	6.0	74.8	75.7	72.8	8.2	6.8	11.4	10.7	7.9	16.7
Black	93.5	95.5	90.6	3.3	4.2	2.1	78.4	82.9	71.8	4.6	5.4	3.5	7.8	9.3	5.5
Asian	94.3	93.6	97.0	3.5	3.1	5.2	91.6	94.1	81.3	5.4	(3)	27.5	8.8	3.1	31.3
Native American	93.1	92.3	100.0	(3)	(3)	(3)	89.6	91.7	71.4	7.5	8.3	(3)	7.5	8.3	(3)
Hispanic (2)	98.7	100.0	95.8	3.0	3.7	1.5	69.5	66.0	77.6	3.1	(3)	10.4	6.1	3.7	11.8
Other social scientists	93.6	93.7	93.0	1.2	1.2	1.5	76.1	77.6	70.5	3.3	2.4	6.5	4.5	3.6	7.9
White	93.2	93.3	92.5	1.1	1.0	1.6	76.5	78.0	71.3	3.3	2.5	6.2	4.4	3.5	7.7
Black	98.6	98.5	98.9	1.7	2.2	.8	66.8	70.3	59.7	3.3	2.5	4.9	5.0	4.6	5.7
Asian	97.0	97.1	96.6	3.3	3.6	2.1	71.3	72.9	63.3	3.0	.7	14.2	6.3	4.3	16.0
Native American	100.0	100.0	100.0	19.5	30.8	(3)	78.8	100.0	53.3	9.1	(3)	20.0	26.8	30.8	20.0
Hispanic (2)	100.0	100.0	100.0	1.4	(3)	6.8	81.6	84.6	69.1	1.0	.7	2.2	2.5	.7	8.9

See footnotes at end of table.

Table 19 cont.

Field and racial/ethnic group	Labor force participation rate			Unemployment rate			S/E employment rate			S/E underemployment rate			S/E underutilization rate		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
Total engineers	95.9	95.9	96.7	.6	.6	1.1	92.9	92.9	94.4	.5	.5	1.1	1.1	1.1	2.2
White	95.1	95.0	96.7	0.6	0.6	0.7	92.9	92.9	93.7	0.4	0.4	1.1	1.1	1.0	1.8
Black	99.7	100.0	96.4	(3)	(3)	(3)	95.9	95.8	96.3	.5	.2	3.7	.5	.2	3.7
Asian	99.1	99.2	96.9	.7	.6	3.2	93.3	93.2	97.7	.9	.9	.7	1.6	1.5	3.8
Native American	97.3	100.0	87.5	(3)	(3)	(3)	97.2	96.6	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	95.6	95.5	100.0	1.1	1.1	(3)	88.2	87.8	100.0	.2	(3)	6.1	1.3	1.1	6.1
Aeronautical/astronautical	97.1	97.0	98.4	.9	1.0	(3)	96.4	96.3	98.3	(3)	(3)	(3)	.9	1.0	(3)
White	96.4	96.4	97.6	(3)	(3)	(3)	95.6	95.5	97.5	(3)	(3)	(3)	(3)	(3)	(3)
Black	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	100.0	100.0	100.0	5.1	5.3	(3)	100.0	100.0	100.0	(3)	(3)	(3)	5.1	5.3	(3)
Native American	100.0	(3)	100.0	(3)	(3)	(3)	100.0	(3)	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Chemical	91.4	91.3	97.3	.9	.9	3.4	89.2	89.0	97.1	1.2	1.2	(3)	2.1	2.1	3.4
White	89.8	89.6	98.3	.9	.8	3.5	91.5	91.4	96.4	.6	.6	(3)	1.5	1.5	3.5
Black	100.0	100.0	100.0	(3)	(3)	(3)	94.4	93.8	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	95.5	95.6	91.3	1.1	1.1	4.8	82.1	81.9	100.0	2.9	3.0	(3)	4.0	4.0	4.8
Native American	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	97.1	96.9	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Civil	93.7	93.6	98.2	.1	.1	(3)	91.3	91.3	88.3	.1	(3)	3.7	.2	.1	3.7
White	92.3	92.1	100.0	.2	.2	(3)	90.7	90.7	87.4	.1	(3)	3.0	.2	.2	3.0
Black	100.0	100.0	100.0	(3)	(3)	(3)	91.3	89.5	100.0	4.3	5.3	(3)	4.3	5.3	(3)
Asian	99.8	100.0	86.4	(3)	(3)	(3)	93.6	93.7	89.5	.2	(3)	10.5	.2	(3)	10.5
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	(3)	(3)	(3)	(3)	86.6	86.6	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Electrical/electronics	96.2	96.1	98.4	1.3	1.3	1.3	92.1	92.0	98.4	.1	.1	.8	1.4	1.4	2.2
White	95.3	95.2	97.8	1.6	1.7	.8	92.4	92.2	98.5	.1	.1	1.1	1.7	1.7	1.9
Black	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	99.3	99.3	100.0	.1	(3)	3.2	93.6	93.4	100.0	.1	.1	(3)	.2	.1	3.2
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	85.4	84.7	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Materials science	96.5	96.5	94.1	.3	.2	2.0	95.8	95.8	96.4	(3)	(3)	1.6	.3	.2	3.5
White	95.8	95.8	94.1	.3	.2	.5	94.9	94.9	95.6	.1	(3)	1.9	.3	.2	2.4
Black	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	99.8	100.0	93.2	.3	(3)	9.8	99.9	99.9	100.0	(3)	(3)	(3)	.3	(3)	9.8
Native American	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	1.8	(3)	16.7	1.8	(3)	16.7
Mechanical	96.3	96.3	96.1	0.9	0.9	0.0	93.4	93.4	93.9	0.1	0.1	0.0	1.1	1.1	0.0
White	95.3	95.3	97.3	1.2	1.2	(3)	91.8	91.8	91.8	.1	.1	(3)	1.3	1.4	(3)
Black	100.0	100.0	100.0	(3)	(3)	(3)	97.6	97.6	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	99.9	100.0	91.3	(3)	(3)	(3)	98.6	98.5	100.0	.1	.1	(3)	.1	.1	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	86.2	86.2	(3)	14.8	14.8	(3)	100.0	100.0	(3)	(3)	(3)	(3)	14.8	14.8	(3)
Nuclear	100.0	100.0	100.0	(3)	(3)	(3)	95.7	95.7	100.0	(3)	(3)	(3)	(3)	(3)	(3)
White	100.0	100.0	100.0	(3)	(3)	(3)	97.8	97.7	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Black	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Asian	100.0	100.0	100.0	(3)	(3)	(3)	87.6	87.3	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Native American	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Systems design	99.8	99.9	97.1	.3	.2	1.2	91.2	91.3	90.8	(3)	(3)	(3)	.3	.2	1.2
White	99.9	100.0	97.7	.1	(3)	1.6	91.5	91.6	88.1	(3)	(3)	(3)	.1	(3)	1.6
Black	95.5	100.0	88.9	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Asian	99.3	99.3	100.0	3.1	3.4	(3)	84.2	82.9	100.0	(3)	(3)	(3)	3.1	3.4	(3)
Native American	100.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	100.0	100.0	100.0	(3)	(3)	(3)	46.6	45.8	100.0	(3)	(3)	(3)	(3)	(3)	(3)
Other engineers	96.4	96.4	95.2	.3	.3	.5	93.2	93.2	91.1	1.4	1.4	1.5	1.8	1.8	2.0
White	95.6	95.6	94.5	.4	.4	(3)	93.0	93.0	91.5	1.3	1.3	1.2	1.7	1.7	1.2
Black	100.0	100.0	100.0	(3)	(3)	(3)	84.1	85.3	50.0	1.8	(3)	50.0	1.8	(3)	50.0
Asian	100.0	100.0	100.0	.1	(3)	3.2	94.2	94.2	91.7	2.1	2.1	(3)	2.2	2.1	3.2
Native American	80.0	100.0	(3)	(3)	(3)	(3)	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)	(3)
Hispanic (2)	95.1	95.0	100.0	(3)	(3)	(3)	100.0	100.0	100.0	(3)	(3)	(3)	(3)	(3)	(3)

(1) Detail will not average to total because
    a) racial and ethnic categories are not exclusive
    b) total includes other and no report
(2) Includes members of all racial groups
(3) Too few cases to estimate

NOTE: See Technical Notes for definitions of market rates
SOURCE: National Science Foundation, SRS

Table 20. Selected market characteristics of recent science and engineering graduates by field and degree level: 1986 (1984 & 1985 graduates)

Field and degree level	Labor force participation rate	Unemployment rate	S/E Employment rate	S/E underemployment rate	S/E underutilization rate
	Bachelor's (1)				
Total, all fields	98.1	3.5	63.8	7.4	10.6
Total scientists	97.6	3.9	52.6	9.6	13.2
Physical scientists	97.0	2.0	68.0	10.8	12.6
Chemists	95.3	2.7	75.5	5.3	7.9
Physicists/astronomers	98.6	2.4	80.2	4.8	7.0
Other physical scientists	100.0	.2	39.1	29.3	29.4
Mathematical scientists	98.0	1.9	73.6	5.7	7.5
Computer scientists	99.7	2.7	89.2	4.2	6.8
Environmental scientists	97.9	4.4	60.8	18.7	22.2
Life scientists	95.8	4.9	56.7	13.6	17.8
Biological scientists	94.7	6.2	51.1	14.9	20.2
Agricultural scientists	98.0	2.3	67.8	10.9	12.9
Psychologists	95.6	5.3	26.1	11.6	16.2
Social scientists	98.0	4.4	30.5	10.1	14.1
Economists	100.0	5.8	39.6	7.4	12.8
Sociologists/anthropologists	96.0	10.9	31.0	11.0	20.6
Other social scientists	97.2	.6	23.5	11.9	12.4
Total engineers	99.3	2.4	89.1	2.3	4.6
Aeronautical/astronautical	99.1	1.9	86.0	3.8	5.6
Chemical	98.9	3.2	85.8	4.2	7.3
Civil	99.5	2.3	92.7	2.0	4.3
Electrical/electronics	99.1	2.0	91.9	1.4	3.4
Industrial	98.9	.4	87.3	2.5	2.9
Materials	96.7	2.2	88.9	1.4	3.6
Mechanical	100.0	2.6	90.3	1.9	4.5
Mining	97.5	5.7	81.8	14.5	19.3
Nuclear	99.4	2.2	92.2	2.9	5.0
Petroleum	100.0	8.5	88.3	8.0	15.8
Other engineers	99.1	2.2	81.2	2.2	4.3
	Master's (1)				
Total, all fields	97.9	2.1	84.3	3.2	5.2
Total scientists	97.3	2.6	78.6	4.6	7.1
Physical scientists	96.4	1.4	85.7	6.5	7.7
Chemists	97.7	1.3	90.9	4.4	5.7
Physicists/astronomers	94.9	2.2	86.4	10.8	12.8
Other physical scientists	95.3	.2	71.9	5.4	5.6
Mathematical scientists	97.6	1.5	89.7	1.2	2.7
Computer scientists	98.4	.4	90.0	1.3	1.8
Environmental scientists	98.6	6.1	92.5	3.9	9.7
Life scientists	97.4	4.2	80.6	3.2	7.3
Biological scientists	97.5	4.0	77.9	3.6	7.5
Agricultural scientists	97.2	4.6	85.7	2.5	7.0
Psychologists	96.5	4.4	67.3	6.8	10.9
Social scientists	96.0	3.4	55.8	10.2	13.2
Economists	94.2	3.5	57.7	12.6	15.6
Sociologists/anthropologists	94.8	4.9	39.6	22.1	25.9
Other social scientists	97.4	2.8	60.6	4.8	7.5
Total engineers	99.0	1.2	94.6	.6	1.8
Aeronautical/astronautical	100.0	2.9	91.7	(2)	2.9
Chemical	99.0	3.3	94.8	1.7	4.9
Civil	98.5	1.0	95.5	(2)	1.0
Electrical/electronics	99.7	(2)	96.8	.7	.7
Industrial	99.9	2.3	83.3	.1	2.4
Materials	99.0	1.0	95.4	1.8	2.8
Mechanical	99.7	1.3	96.5	.3	1.6
Mining	92.3	(2)	100.0	(2)	(2)
Nuclear	99.4	(2)	97.6	.9	.9
Petroleum	100.0	2.6	99.1	(2)	2.6
Other engineers	97.4	2.1	90.4	.7	2.8

(1) Exclusive of full-time graduate students
(2) Too few cases to estimate

NOTE: See Technical Notes for definitions of market rates
SOURCE: National Science Foundation, SRS

Table 20a. Selected market characteristics of recent doctoral science and engineering graduates by field: 1987 (1985 & 1986 graduates)

Field	Labor force participation rate	Unemployment rate	S/E employment rate	S/E underemployment rate	S/E underutilization rate
Total, all fields	98.0	1.6	92.6	3.2	4.7
Total scientists	97.7	1.7	92.1	3.7	5.3
Physical scientists	98.8	1.1	97.9	.8	1.9
Chemists	98.5	.7	97.1	1.0	1.6
Physicists/astronomers	99.5	1.9	99.3	.3	2.2
Mathematical scientists	99.6	.4	89.1	.2	.6
Mathematicans	99.5	.5	85.4	.2	.8
Statisticians	100.0	(1)	100.0	(1)	(1)
Computer specialists	100.0	.2	96.5	.4	.5
Environmental scientists	98.5	.8	97.4	2.3	3.1
Earth scientists	97.8	1.1	97.2	3.4	4.5
Oceanographers	100.0	(1)	96.5	(1)	(1)
Atmospheric scientists	100.0	(1)	100.0	(1)	(1)
Life scientists	96.7	2.3	94.6	2.3	4.5
Biological scientists	96.4	2.6	94.9	2.5	5.0
Agricultural scientists	99.3	3.6	95.6	1.6	5.1
Medical scientists	96.1	.8	93.6	2.0	2.8
Psychologists	97.6	1.4	93.3	2.2	3.5
Social scientists	97.6	2.4	79.0	12.5	14.7
Economists	97.3	(1)	93.1	1.5	1.5
Sociologists/anthropologists	95.3	12.6	65.7	24.7	34.2
Other social scientists	98.5	.6	74.8	15.3	15.8
Total engineers	99.3	0.7	95.8	0.6	1.3
Aeronautical/astronautical	97.2	(1)	100.0	(1)	(1)
Chemical	100.0	1.4	95.6	(1)	1.4
Civil	100.0	1.9	97.1	(1)	1.9
Electrical/electronics	99.7	.2	96.8	.8	1.0
Materials science	99.9	.7	98.5	(1)	.7
Mechanical	98.5	2.3	93.4	1.8	4.1
Nuclear	100.0	(1)	100.0	(1)	(1)
Systems design	99.3	.7	97.3	(1)	.7
Other engineers	98.5	(1)	92.0	1.1	1.1

(1) Too few cases to estimate

NOTE: See Technical Notes for definitions of market rates
SOURCE: National Science Foundation, SRS

Table 21. Average annual salaries of scientists and engineers by field, sex and racial/ethnic group: 1986

Field	Sex/racial/ethnic group							
	Total (1)	Men	Women	White	Black	Asian	Native American	Hispanic (2)
Total, all fields	$38,400	$39,800	$29,900	$38,700	$31,500	$39,100	$41,000	$34,600
Total scientists	35,700	38,000	29,000	35,900	29,000	37,000	40,500	30,600
Physical scientists	40,700	42,000	31,300	40,900	35,600	39,300	63,400	41,300
Chemists	38,900	40,300	30,200	39,300	34,800	35,800	64,400	35,200
Physicists/astronomers	45,900	46,300	39,600	45,700	39,500	49,800	63,000	50,000
Other physical scientists	39,200	40,900	29,000	38,800	37,600	53,700	50,000	28,100
Mathematical scientists	39,800	42,500	31,000	40,000	37,000	38,500	22,500	38,700
Mathematicians	39,500	42,300	30,400	39,500	37,400	40,000	22,500	39,400
Statisticians	41,600	43,400	34,800	42,900	33,300	31,900	(3)	33,000
Computer specialists	37,300	38,900	33,200	37,500	32,200	37,400	39,300	31,500
Environmental scientists	37,500	38,400	30,100	37,600	31,800	40,600	27,000	40,500
Earth scientists	36,900	37,900	29,800	37,000	30,500	39,800	21,100	39,900
Oceanographers	39,600	40,900	32,500	40,000	29,900	36,700	35,000	31,900
Atmospheric scientists	40,400	40,800	30,800	40,500	34,200	43,900	(3)	48,300
Life scientists	33,100	35,400	25,200	33,200	29,300	35,700	40,600	29,700
Biological scientists	33,000	35,400	25,200	33,200	29,300	33,600	32,900	30,500
Agricultural scientists	30,900	33,300	20,300	30,800	24,500	37,500	52,200	26,700
Medical scientists	41,100	42,800	35,200	41,000	38,700	42,400	48,300	37,600
Psychologists	33,400	36,500	29,000	33,900	26,800	22,500	41,200	25,400
Social scientists	31,800	34,700	25,000	32,200	22,800	38,700	34,300	25,600
Economists	35,300	36,600	29,600	35,600	27,700	34,900	43,700	27,100
Sociologists/anthropologists	27,000	30,500	22,600	27,500	15,200	39,100	30,600	28,200
Other social scientists	31,400	34,600	24,300	31,600	25,900	43,000	19,200	18,000
Total engineers	$40,800	$41,100	$34,300	$41,000	$35,700	$40,500	$41,300	$38,000
Aeronautical/astronautical	43,800	44,200	32,400	43,900	33,900	44,800	52,200	38,000
Chemical	43,700	44,400	35,600	43,900	53,800	38,400	48,000	34,100
Civil	38,000	38,200	32,100	38,100	31,600	38,900	42,200	35,200
Electrical/electronics	42,400	42,500	36,700	42,600	36,100	42,100	44,300	40,300
Industrial	37,900	38,200	32,900	38,300	26,200	33,700	37,200	29,500
Materials	42,000	42,500	32,100	42,100	33,300	43,100	42,300	33,900
Mechanical	40,800	41,000	33,600	40,900	37,800	40,600	41,400	40,000
Mining	39,600	40,000	27,500	39,700	15,800	39,400	(3)	37,000
Nuclear	44,100	44,500	34,400	44,300	42,300	44,100	30,600	34,600
Petroleum	45,100	45,300	42,100	44,600	50,800	53,700	46,300	47,800
Other engineers	39,800	40,100	34,100	40,000	33,900	39,500	36,300	38,500

(1) Detail will not add to total because
a) racial and ethnic groups are not mutually exclusive and
b) total includes other and no report

(2) Includes members of all racial groups

(3) Too few cases to estimate

NOTE: Salaries computed for individuals employed full-time
SOURCE: National Science Foundation, SRS

Table 22. Median annual salaries of doctoral scientists and engineers by field, sex, and racial/ethnic group: 1987

Field	Total (1)	Sex/racial/ethnic group						
		Men	Women	White	Black	Asian	Native American	Hispanic (2)
Total, all fields	49,600	50,700	40,200	49,900	42,800	50,000	45,400	47,200
Total, all scientists	47,800	49,200	40,000	48,000	42,700	47,100	44,900	45,400
Physical scientists	51,400	52,400	41,900	52,000	43,200	49,100	(3)	51,500
Chemists	50,500	51,300	41,500	50,800	43,300	48,800	(3)	48,800
Physicists/astronomers	53,400	53,800	45,500	54,100	42,600	50,600	(3)	56,400
Mathematical scientists	46,600	47,500	39,600	47,300	46,000	41,000	(3)	44,800
Mathematicans	46,600	47,500	38,400	46,700	47,000	44,200	(3)	45,400
Statisticans	46,700	47,300	42,700	48,800	(3)	35,700	(3)	(3)
Computer specialists	54,400	55,400	43,400	54,100	(3)	54,400	(3)	55,800
Environmental scientists	50,300	50,700	41,800	50,300	48,900	51,000	(3)	44,400
Earth scientists	50,800	51,400	41,800	50,700	(3)	55,400	(3)	46,200
Oceanographers	44,300	44,900	41,100	44,600	(3)	42,200	(3)	(3)
Atmospheric scientists	50,000	50,200	44,500	50,000	(3)	(3)	(3)	(3)
Life scientists	45,700	48,000	39,600	45,900	42,500	44,800	45,500	42,100
Biological scientists	44,500	46,000	38,600	44,600	43,000	44,000	(3)	45,000
Agricultural scientists	44,300	45,000	36,000	44,500	38,200	40,800	(3)	35,400
Medical scientists	50,400	55,300	41,100	50,600	42,500	47,800	(3)	40,900
Psychologists	44,300	46,200	39,500	44,600	40,100	40,400	(3)	43,700
Social scientists	45,300	47,000	39,600	45,600	40,900	45,500	(3)	42,500
Economists	50,800	51,500	45,000	51,300	40,800	48,100	(3)	56,700
Sociologists/anthropologists	41,700	42,700	37,400	42,100	36,100	38,700	(3)	37,800
Other social scientists	44,100	45,600	39,000	44,200	44,000	44,000	(3)	39,800
Total engineers	58,100	58,500	48,200	59,800	44,700	54,300	(3)	50,300
Aeronautical/astronautical	60,900	61,400	48,600	62,600	(3)	47,200	(3)	(3)
Chemical	58,900	59,900	46,800	60,500	(3)	55,700	(3)	(3)
Civil	53,300	53,500	42,400	53,500	(3)	52,100	(3)	(3)
Electrical/electronics	60,500	60,600	49,500	60,700	42,900	58,800	(3)	(3)
Materials science	58,000	58,100	51,500	59,700	(3)	51,000	(3)	(3)
Mechanical	55,700	55,700	50,200	55,900	(3)	55,500	(3)	(3)
Nuclear	58,900	60,000	(3)	60,300	(3)	(3)	(3)	(3)
Systems design	62,200	62,400	52,300	62,500	(3)	55,700	(3)	(3)
Other engineers	56,700	56,900	45,800	58,500	(3)	49,400	(3)	64,600

(1) Detail will not average to total because
a) racial and ethnic categories are not mutually exclusive
b) total includes other and no report
(2) Includes members of all racial groups
(3) Too few cases to estimate
NOTE: Salaries computed for individuals employed full-time
SOURCE:, National Science Foundation, SRS

Table 23. Median annual salaries of recent science and engineering graduates by field and degree level: selected years

Field	Bachelor Recipients(1)	Master Recipients(1)	Doctorate Recipients(2)
Total, all fields	27,200	33,100	36,800
Total scientists	23,900	30,000	34,700
Physical scientists	20,000	31,000	39,500
Chemists	20,000	30,000	39,100
Physicists/astronomers	26,500	30,000	40,700
Other physical scientists	19,600	28,000	NA
Mathematical scientists	22,000	30,600	33,500
Mathematicians	NA	NA	31,600
Statisticians	NA	NA	35,300
Computer specialists	28,100	36,000	46,500
Environmental scientists	20,000	30,000	35,100
Earth scientists	NA	NA	36,300
Oceanographers	NA	NA	(3)
Atmospheric scientists	NA	NA	(3)
Life scientists	16,500	20,300	33,300
Biological scientists	17,000	20,000	29,700
Agricultural scientists	17,500	21,800	32,800
Medical scientists	NA	NA	37,000
Psychologists	16,000	20,000	30,600
Social scientists	18,000	22,500	34,500
Economists	21,900	26,300	38,200
Sociologists/anthropologists	19,000	(3)	30,700
Other social scientists	19,000	25,000	32,000
Total engineers	30,000	36,000	44,300
Aeronautical/astronautical	29,800	36,000	42,400
Chemical	30,800	35,000	44,000
Civil	26,000	30,000	41,300
Electrical/electronic	30,400	39,000	48,200
Industrial	28,600	34,600	NA
Materials	29,200	35,500	43,900
Mechanical	30,000	35,800	42,900
Mining	25,000	29,500	NA
Nuclear	30,000	37,000	(3)
Petroleum	32,000	38,500	NA
Other engineers	28,500	34,800	42,400

(1) 1984 and 1985 graduates in 1986
(2) 1985 and 1986 graduates in 1987
(3) No median computed for groups with fewer than 20 individuals reporting salary
NA: Not available
NOTE: Salaries computed for individuals employed full-time
SOURCE: National Science Foundation, SRS

Table 24. Science and engineering bachelor's recipients by field and sex: 1976-86

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						Total					
Total, all fields	292,174	288,543	288,157	288,625	291,983	294,867	302,118	307,225	314,666	321,739	323,950
Total science	253,060	246,962	240,746	234,905	232,743	230,799	234,327	234,271	238,135	243,868	246,889
Physical sciences	16,513	16,965	17,172	17,281	17,506	17,481	17,311	16,199	15,834	16,271	15,786
Chemistry	11,107	11,322	11,474	11,643	11,446	11,540	11,316	11,039	10,912	10,701	10,317
Physics	3,544	3,420	3,330	3,338	3,397	3,441	3,475	3,800	3,921	4,111	4,189
Astronomy	166	152	128	120	122	129	113	96	95	119	149
Other	1,696	2,071	2,240	2,180	2,541	2,371	2,407	1,264	906	1,340	1,131
Mathematics	16,085	14,303	12,701	11,901	11,473	11,173	11,708	12,557	13,342	15,267	16,388
Computer sciences	5,664	6,426	7,224	8,769	11,213	15,233	20,431	24,678	32,435	39,121	42,195
Environmental sciences	5,046	5,653	6,003	6,082	6,155	6,694	7,061	7,298	7,925	7,576	6,076
Earth/geological sciences	4,441	4,998	5,416	5,467	5,536	6,110	6,429	6,774	7,285	7,001	5,555
Other	605	655	587	615	619	584	632	524	640	575	521
Life sciences	77,301	78,472	77,138	75,085	71,617	68,086	65,041	63,237	59,613	57,812	56,465
Biological sciences	59,012	58,273	56,111	53,454	50,496	47,920	45,806	44,067	42,310	41,933	41,725
Agricultural sciences	18,289	20,199	21,027	21,631	21,121	20,166	19,235	19,170	17,303	15,879	14,740
Psychology	50,363	47,794	45,057	43,012	42,513	41,364	41,539	40,825	40,375	40,237	40,937
Social sciences	82,088	77,349	75,461	72,775	72,266	70,768	71,236	69,477	68,611	67,584	69,042
Economics (1)	16,025	16,674	17,443	18,150	19,736	20,700	21,880	22,140	22,874	23,073	23,796
Sociology	27,970	24,989	22,991	20,545	19,164	17,582	16,324	14,343	13,320	12,129	12,397
Anthropology	5,267	4,912	4,372	4,083	3,675	3,416	3,149	2,873	2,769	2,684	2,654
Political sciences	28,515	26,576	26,245	25,817	25,658	25,217	25,885	26,020	25,943	26,065	26,661
Other	4,311	4,198	4,410	4,180	4,033	3,853	3,998	4,101	3,705	3,633	3,534
Total engineering	39,114	41,581	47,411	53,720	59,240	64,068	67,791	72,954	76,531	77,871	77,061
Aeronautical/astronautical	1,009	1,078	1,186	1,386	1,424	1,809	2,120	2,127	2,534	2,854	2,902
Chemical	3,203	3,581	4,615	5,655	6,383	6,604	6,814	7,256	7,558	7,222	5,952
Civil	8,059	8,376	9,265	9,941	10,442	10,752	10,570	10,054	9,750	9,208	8,728
Electrical	9,874	10,018	11,213	12,440	13,902	15,040	16,553	18,184	20,059	21,814	23,874
Mechanical	6,841	7,771	8,924	10,171	11,863	13,388	13,988	15,729	16,691	16,851	16,279
Other	10,128	10,757	12,208	14,127	15,226	16,475	17,746	19,604	19,939	19,922	19,326

Table 24 cont.

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						Men					
Total, all fields	196,577	191,090	188,107	186,333	186,009	186,425	188,957	191.614	196,650	200,300	200,893
Total science	158,906	151,595	144,193	137,532	132,783	129,474	129,503	128,379	130,952	133,745	135,035
Physical sciences	13,296	13,588	13,479	13,381	13,317	13,167	12,779	11.586	11,177	11,434	11,090
Chemistry	8,610	8,720	8,593	8,530	8,169	8,065	7,703	7,303	7,087	6,807	6,573
Physics	3,156	3,062	2,961	2,939	2,963	3,009	3,014	3,317	3,361	3,550	3,578
Astronomy	149	131	102	100	98	103	92	72	75	89	126
Other	1,381	1,675	1,823	1,812	2,087	1,990	1,970	894	654	988	813
Mathematics	9,531	8,354	7,455	6,943	6,625	6,392	6,650	7,059	7,428	8,231	8,772
Computer sciences	4,540	4,887	5,360	6,306	7,814	10,280	13,316	15,687	20,369	24,690	27,069
Environmental sciences	4,124	4,479	4,709	4,695	4,693	5,028	5,254	5,450	5,991	5,715	5,722
Earth/geological sciences	3,568	3,896	4,185	4,153	4,170	4,550	4,731	5,007	5,477	5,244	5,292
Other	556	583	524	542	523	478	523	443	514	471	430
Life sciences	53,512	52,863	50,184	47,537	44,021	40,610	38,115	36,677	34,253	32,663	31,643
Biological sciences	38,714	37,325	34,574	31,997	29,405	26,898	25,141	23,962	22,653	21,922	21,702
Agricultural sciences	14,798	15,538	15,610	15,540	14,616	13,712	12,974	12,715	11,600	10,741	9,941
Psychology	22,987	20,692	18,517	16.649	15,590	14,447	13,756	13,228	12,949	12,815	12,691
Social sciences	50,916	46,732	44,489	42,021	40,723	39,550	39,633	38,692	38,785	38,197	39,048
Economics (1)	13,032	13,027	13,333	13,383	14,024	14,650	15,037	15,163	15,359	15,400	15,842
Sociology	11,379	9,802	8,423	7,155	6,383	5,357	4,886	4,360	4,275	3,759	3,862
Anthropology	2,225	2,032	1,739	1.580	1,372	1,249	1,149	1,016	1,033	1,021	987
Political sciences	21,310	19,079	18,077	17,197	16,446	15,946	16,026	15,792	15,778	15,765	16,081
Other	2,970	2,792	2,917	2,706	2,498	2,348	2,535	2,361	2,340	2,252	2,276
Total engineering	37,671	39,495	43,914	48,801	53,226	56,951	59,454	63,235	65,698	66,555	65,858
Aeronautical/astronautical	980	1,050	1,125	1,320	1,342	1,680	1,949	1,955	2,359	2,613	2,654
Chemical	2,927	3,152	3,899	4,649	5,168	5,336	5,328	5,618	5,661	5,347	4,483
Civil	7,807	7,943	8,575	8,986	9,451	9,628	9,375	8,728	8,441	7,975	7,582
Electrical	9,681	9,750	10,778	11,781	13,000	13,940	15,142	16,405	18,028	19,392	21,018
Mechanical	6,694	7,535	8,458	9,568	10,981	12,252	12,768	14,284	14,927	15,097	14,602
Other	9,582	10,065	11,079	12,497	13,284	14,115	14,892	16,245	16,282	16,131	15,519

Table 24 cont.

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
						Women					
Total, all fields	95,597	97,453	100,060	102,292	105,974	108,442	113,161	115,611	118,016	121,439	123,057
Total science	94,154	95,367	96,563	97,373	99,960	101,325	104,824	105,892	107,183	110,123	111,854
Physical sciences	3,217	3,377	3,693	3,900	4,189	4,314	4,532	4,613	4,657	4,837	4,696
Chemistry	2,497	2,602	2,881	3,113	3,277	3,475	3,613	3,736	3,825	3,894	3,744
Physics	388	358	369	399	434	432	461	483	560	561	611
Astronomy	17	21	26	20	24	26	21	24	20	30	23
Other	315	396	417	368	454	381	437	370	252	352	318
Mathematics	6,554	5,949	5,246	4,958	4,848	4,781	5,058	5,498	5,914	7,036	7,616
Computer sciences	1,124	1,539	1,864	2,463	3,399	4,953	7,115	8,991	12,066	14,431	15,126
Environmental sciences	922	1,174	1,294	1,387	1,462	1,666	1,807	1,848	1,934	1,861	1,354
Earth/geological sciences	873	1,102	1,231	1,314	1,366	1,560	1,698	1,767	1,808	1,757	1,263
Other	49	72	63	73	96	106	109	81	126	104	91
Life sciences	23,789	25,609	26,954	27,548	27,596	27,476	26,926	26,560	25,360	25,149	24,822
Biological sciences	20,298	20,948	21,537	21,457	21,091	21,022	20,665	20,105	19,657	20,011	20,023
Agricultural sciences	3,491	4,661	5,417	6,091	6,505	6,454	6,261	6,455	5,703	5,138	4,799
Psychology	27,376	27,102	26,540	26,363	26,923	26,917	27,783	27,597	27,426	27,422	28,246
Social sciences	31,172	30,617	30,972	30,754	31,543	31,218	31,603	30,785	29,826	29,387	29,994
Economics (1)	2,993	3,647	4,110	4,767	5,712	6,050	6,843	7,247	7,515	7,673	7,954
Sociology	16,591	15,187	14,568	13,390	12,781	12,225	11,438	9,983	9,045	8,370	8,535
Anthropology	3,042	2,880	2,633	2,503	2,303	2,167	2,000	1,857	1,736	1,663	1,667
Political sciences	7,205	7,497	8,168	8,620	9,212	9,271	9,859	10,228	10,165	10,300	10,580
Other	1,341	1,406	1,493	1,474	1,535	1,505	1,463	1,470	1,365	1,381	1,258
Total engineering	1,443	2,086	3,497	4,919	6,014	7,117	8,337	9,719	10,833	11,316	11,203
Aeronautical/astronautical	29	28	61	66	82	129	171	172	175	241	248
Chemical	276	429	716	1,006	1,215	1,268	1,486	1,638	1,897	1,875	1,469
Civil	252	433	690	955	991	1,124	1,195	1,326	1,309	1,233	1,146
Electrical	193	268	435	659	902	1,100	1,411	1,779	2,031	2,422	2,856
Mechanical	147	236	466	603	882	1,136	1,220	1,445	1,764	1,754	1,677
Other	546	692	1,129	1,630	1,942	2,360	2,854	3,359	3,657	3,791	3,807

(1) Includes economics and agricultural economics.

SOURCE: National Science Foundation, SRS and National Center for Education Statistics, Department of Education

Table 25. Science and engineering master's degree recipients by field and sex: 1976-86

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	Total										
Total, all fields	54,747	56,731	56,237	54,456	54,391	54,811	57,025	58,868	59,569	61,278	62,526
Total science	38,577	39,842	39,222	38,263	37,545	37,438	38,431	39,147	39,217	40,072	41,212
Physical sciences	3,904	3,686	3,744	3,687	3,440	3,424	3,514	3,329	3,586	3,642	3,676
Chemistry	1,796	1,775	1,892	1,765	1,733	1,667	1,758	1,632	1,677	1,734	1,764
Physics	1,451	1,319	1,294	1,319	1,192	1,294	1,284	1,370	1,535	1,523	1,501
Astronomy	89	81	95	116	79	58	80	68	67	91	83
Other	568	511	463	487	436	405	392	259	307	294	328
Mathematics	3,863	3,698	3,383	3,046	2,868	2,569	2,731	2,839	2,749	2,888	3,171
Computer sciences	2,603	2,798	3,038	3,055	3,647	4,218	4,935	5,321	6,190	7,101	8,070
Environmental sciences	1,581	1,659	1,832	1,777	1,793	1,876	2,012	1,959	1,982	2,160	2,234
Earth/geological sciences	1,232	1,300	1,456	1,435	1,481	1,527	1,682	1,673	1,617	1,806	1,895
Other	349	359	376	342	312	349	330	286	365	354	339
Life sciences	9,823	10,707	10,711	10,719	10,278	9,731	9,824	9,720	9,330	8,757	8,572
Biological sciences	6,939	7,468	7,227	7,220	6,854	6,299	6,184	6,041	5,717	5,345	5,289
Agricultural sciences	2,884	3,239	3,484	3,499	3,424	3,432	3,640	3,679	3,613	3,412	3,283
Psychology	7,859	8,320	8,194	8,031	7,861	8,039	7,849	8,439	8,073	8,481	8,363
Social sciences	8,944	8,974	8,320	7,948	7,658	7,581	7,566	7,540	7,307	7,043	7,126
Economics (1)	2,560	2,662	2,549	2,468	2,386	2,498	2,506	2,568	2,482	2,532	2,496
Sociology	2,010	1,830	1,611	1,415	1,341	1,240	1,154	1,112	1,008	1,022	965
Anthropology	969	994	881	867	861	892	849	815	779	771	746
Political sciences	2,192	2,223	2,070	2,038	1,938	1,876	1,955	1,829	1,770	1,500	1,704
Other	1,213	1,265	1,209	1,160	1,132	1,075	1,102	1,216	1,268	1,218	1,215
Total engineering	16,170	16,889	17,015	16,193	16,846	17,373	18,594	19,721	20,352	21,206	21,314
Aeronautical/astronautical	479	385	411	372	382	408	521	491	562	605	621
Chemical	1,031	1,086	1,237	1,149	1,271	1,268	1,287	1,371	1,517	1,549	1,367
Civil	3,000	2,969	2,691	2,655	2,683	2,894	2,998	3,082	3,151	3,174	2,928
Electrical	3,774	3,788	3,742	3,596	3,842	3,902	4,465	4,532	5,079	5,154	5,535
Mechanical	1,907	1,953	1,943	1,878	2,060	2,293	2,399	2,511	2,797	3,053	3,076
Other	5,979	6,708	6,991	6,543	6,608	6,608	6,924	7,734	7,246	7,671	7,787

Table 25 cont.

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	Men										
Total, all fields	42,675	43,577	42,547	40,416	40,008	39,797	41,049	41,787	41,894	42,980	43,344
Total science	27,094	27,421	26,403	25,213	24,352	23,830	24,139	23,942	23,701	24,102	24,501
Physical sciences	3,299	3,025	3,088	3,005	2,801	2,743	2,765	2,636	2,736	2,811	2,759
Chemistry	1,413	1,327	1,447	1,318	1,286	1,194	1,261	1,167	1,139	1,166	1,165
Physics	1,319	1,193	1,171	1,184	1,074	1,179	1,128	1,208	1,341	1,333	1,277
Astronomy	81	67	83	101	70	49	69	56	57	76	72
Other	486	438	387	402	371	321	307	205	199	236	245
Mathematics	2,550	2,398	2,233	1,989	1,832	1,692	1,821	1,859	1,795	1,877	2,055
Computer sciences	2,226	2,332	2,471	2,480	2,883	3,247	3,625	3,813	4,379	5,064	5,658
Environmental sciences	1,361	1,433	1,542	1,467	1,457	1,470	1,560	1,515	1,517	1,639	1,717
Earth/geological sciences	1,046	1,109	1,199	1,165	1,186	1,175	1,301	1,279	1,216	1,361	1,444
Other	315	324	343	302	271	295	259	236	301	278	273
Life sciences	7,204	7,696	7,485	7,259	6,952	6,451	6,315	6,111	5,728	5,266	5,022
Biological sciences	4,746	4,956	4,695	4,510	4,325	3,853	3,621	3,421	3,167	2,810	2,742
Agricultural sciences	2,458	2,740	2,790	2,749	2,627	2,598	2,694	2,690	2,561	2,456	2,280
Psychology	4,188	4,316	3,931	3,688	3,397	3,371	3,228	3,254	2,980	3,064	2,937
Social sciences	6,266	6,221	5,653	5,325	5,030	4,856	4,825	4,754	4,566	4,381	4,353
Economics (1)	2,174	2,231	2,091	2,018	1,907	1,941	1,913	1,957	1,891	1,920	1,880
Sociology	1,166	1,018	878	745	667	590	525	485	456	456	429
Anthropology	497	518	440	420	388	374	421	372	324	325	318
Political sciences	1,719	1,719	1,523	1,480	1,423	1,342	1,345	1,286	1,233	1,062	1,154
Other	710	735	721	662	645	609	621	654	662	618	572
Total engineering	15,581	16,156	16,144	15,203	15,656	15,967	16,910	17,845	18,193	18,878	18,843
Aeronautical/astronautical	469	377	400	355	373	388	482	454	535	574	578
Chemical	992	1,021	1,150	1,035	1,138	1,105	1,106	1,207	1,323	1,281	1,153
Civil	2,901	2,840	2,559	2,512	2,486	2,687	2,728	2,787	2,825	2,837	2,628
Electrical	3,670	3,654	3,600	3,453	3,658	3,681	4,177	4,239	4,694	4,720	4,979
Mechanical	1,880	1,904	1,886	1,811	1,962	2,177	2,260	2,362	2,613	2,848	2,839
Other	5,669	6,360	6,549	6,037	6,039	5,929	6,157	6,796	6,203	6,618	6,666

Table 25 cont.

Field	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
	Women										
Total, all fields	12,072	13,154	13,690	14,040	14,383	15,014	15,976	17,081	17,675	18,298	19,182
Total science	11,483	12,421	12,819	13,050	13,193	13,608	14,292	15,205	15,516	15,970	16,711
Physical sciences	605	661	656	682	639	681	749	693	850	831	917
Chemistry	383	448	445	447	447	473	497	465	538	568	599
Physics	132	126	123	135	118	115	156	162	194	190	224
Astronomy	8	14	12	15	9	9	11	12	10	15	11
Other	82	73	76	85	65	84	85	54	108	58	83
Mathematics	1,313	1,300	1,150	1,057	1,036	877	910	980	954	1,011	1,116
Computer sciences	377	466	567	575	764	971	1,310	1,508	1,811	2,037	2,412
Environmental sciences	220	226	290	310	336	406	452	444	465	521	517
Earth/geological sciences	186	191	257	270	295	352	381	394	401	445	451
Other	34	35	33	40	41	54	71	50	64	76	66
Life sciences	2,619	3,011	3,226	3,460	3,326	3,280	3,509	3,609	3,602	3,491	3,550
Biological sciences	2,193	2,512	2,532	2,710	2,529	2,446	2,563	2,620	2,550	2,535	2,547
Agricultural sciences	426	499	694	750	797	834	946	989	1,052	956	1,003
Psychology	3,671	4,004	4,263	4,343	4,464	4,668	4,621	5,185	5,093	5,417	5,426
Social sciences	2,678	2,753	2,667	2,623	2,628	2,725	2,741	2,786	2,741	2,662	2,773
Economics (1)	386	431	458	450	479	557	593	611	591	612	616
Sociology	844	812	733	670	674	650	629	627	552	566	536
Anthropology	472	476	441	447	473	518	428	443	455	446	428
Political sciences	473	504	547	558	515	534	610	543	537	438	550
Other	503	530	488	498	487	466	481	562	606	600	643
Total engineering	589	733	871	990	1,190	1,406	1,684	1,876	2,159	2,328	2,471
Aeronautical/astronautical	10	8	11	17	9	20	39	37	27	31	43
Chemical	39	65	87	114	133	163	181	164	194	268	214
Civil	99	129	132	143	197	207	270	295	326	337	300
Electrical	104	134	142	143	184	221	288	293	385	434	556
Mechanical	27	49	57	67	98	116	139	149	184	205	237
Other	310	348	442	506	569	679	767	938	1,043	1,053	1,121

(1) Includes economics and agricultural economics

SOURCE: National Science Foundation, SRS and National Center for Education Statistics, Department of Education

Table 26. Science and engineering doctorate degree recipients by field and sex: 1977-87

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
					Total						
Total, all fields	17,416	17,048	17,245	17,199	17,633	17,629	17,938	18,080	18,277	18,806	19,222
Total science	14,773	14,625	14,755	14,720	15,105	14,983	15,157	15,167	15,111	15,430	15,506
Physical sciences	2,721	2,611	2,674	2,521	2,627	2,694	2,802	2,845	2,916	3,090	3,210
Chemistry	1,571	1,544	1,566	1,538	1,612	1,680	1,759	1,765	1,836	1,903	1,974
Physics	1,030	929	993	862	906	912	928	982	980	1,078	1,136
Astronomy	120	138	115	121	109	102	115	98	100	109	100
Mathematics	933	838	769	744	728	720	701	698	688	729	740
Computer sciences	31	121	210	218	232	220	286	295	310	398	450
Earth, Atmospheric, and Marine sciences	694	623	646	628	583	657	637	614	617	589	627
Life sciences	4,266	4,369	4,501	4,715	4,786	4,844	4,756	4,877	4,900	4,801	4,800
Biological sciences	3,484	3,516	3,646	3,803	3,804	3,893	3,741	3,980	3,789	3,803	3,824
Agricultural sciences	782	853	855	912	982	951	1,015	997	1,111	998	976
Psychology	2,989	3,055	3,091	3,098	3,358	3,158	3,309	3,230	3,073	3,077	3,098
Social sciences	3,139	3,008	2,864	2,796	2,791	2,690	2,666	2,608	2,607	2,746	2,581
Economics (1)	983	960	956	927	993	940	970	952	959	1,018	959
Sociology	725	610	632	601	605	568	525	515	461	492	423
Anthropology	408	431	418	396	397	354	403	366	377	409	383
Political sciences	614	603	522	505	445	459	397	419	406	414	405
Other	409	404	336	367	351	369	371	356	404	413	411
Total engineering	2,648	2,423	2,490	2,479	2,528	2,646	2,781	2,913	3,166	3,376	3,716
Aeronautical/astronautical	115	103	81	81	97	86	106	119	124	118	142
Chemical	306	261	287	285	296	306	349	361	440	476	528
Civil	269	236	236	240	287	308	354	351	358	387	441
Electrical	544	463	533	478	478	544	517	593	631	707	692
Mechanical	270	282	281	293	282	334	311	336	424	442	544
Other	1,144	1,078	1,072	1,102	1,088	1,068	1,144	1,153	1,189	1,246	1,369

Table 26 cont.

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
						Men					
Total, all fields	14,310	13,735	13,662	13,398	13,610	13,485	13,467	13,505	13,615	13,896	14,176
Total science	11,741	11,365	11,234	11,009	11,181	10,963	10,810	10,743	10,647	10,745	10,702
Physical sciences	2,477	2,364	2,382	2,199	2,318	2,337	2,431	2,446	2,452	2,585	2,684
Chemistry	1,391	1,349	1,347	1,283	1,376	1,407	1,462	1,445	1,474	1,507	1,568
Physics	975	884	928	808	844	844	869	915	889	978	1,029
Astronomy	111	131	107	108	98	86	100	86	89	100	87
Mathematics	811	718	650	649	616	624	588	583	582	608	615
Computer sciences	26	110	183	197	206	200	250	258	277	350	385
Earth, Atmospheric, and Marine sciences	635	562	588	564	527	554	540	508	506	489	513
Life sciences	3,423	3,411	3,470	3,565	3,565	3,552	3,390	3,529	3,492	3,351	3,280
Biological sciences	2,697	2,623	2,695	2,750	2,717	2,752	2,508	2,665	2,552	2,525	2,474
Agricultural sciences	726	788	775	815	848	800	882	864	940	826	806
Psychology	1,902	1,928	1,831	1,727	1,885	1,721	1,736	1,611	1,552	1,509	1,446
Social sciences	2,467	2,272	2,130	2,048	2,064	1,975	1,875	1,808	1,786	1,853	1,779
Economics (1)	904	862	840	811	879	820	819	799	514	837	796
Sociology	488	386	400	370	363	354	309	289	227	276	255
Anthropology	264	252	238	208	232	203	209	175	187	198	185
Political sciences	512	485	427	403	349	353	314	322	299	297	294
Other	299	287	225	256	241	245	224	223	559	245	249
Total engineering	2,569	2,370	2,428	2,389	2,429	2,522	2,657	2,762	2,968	3,151	2,474
Aeronautical/astronautical	112	102	81	80	97	85	104	117	119	117	132
Chemical	297	256	279	271	285	289	327	336	405	423	472
Civil	262	230	234	234	281	296	342	332	340	368	424
Electrical	532	451	525	466	464	525	510	579	603	674	662
Mechanical	267	280	277	289	277	322	305	330	402	428	530
Other	1,099	1,051	1,032	1,049	1,025	1,005	1,069	1,068	1,099	1,141	254

Table 26 cont.

Field	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
					Women						
Total, all fields	3,106	3,313	3,583	3,801	4,023	4,144	4,471	4,575	4,662	4,910	5,046
Total science	3,032	3,260	3,521	3,711	3,924	4,020	4,347	4,424	4,464	4,685	4,804
Physical sciences	244	247	292	322	309	357	371	399	464	505	526
Chemistry	180	195	219	255	236	273	297	320	362	396	406
Physics	55	45	65	54	62	68	59	67	91	100	107
Astronomy	9	7	8	13	11	16	15	12	11	9	13
Mathematics	122	120	119	95	112	96	113	115	106	121	125
Computer sciences	5	11	27	21	26	20	36	37	33	48	65
Earth, Atmospheric, and Marine sciences	59	61	58	64	56	103	97	106	111	100	114
Life sciences	843	958	1,031	1,150	1,221	1,292	1,366	1,348	1,408	1,450	1,520
Biological sciences	787	893	951	1,053	1,087	1,141	1,213	1,215	1,237	1,278	1,350
Agricultural sciences	56	65	80	97	134	151	133	133	171	172	170
Psychology	1,087	1,127	1,260	1,311	1,473	1,437	1,573	1,619	1,521	1,568 893	1,652
Social sciences	672	736	734	748	727	715	791	800	821	181	802
Economics (1)	79	98	116	116	114	120	151	153	145	182	163
Sociology	237	224	232	231	242	214	216	226	234	216	168
Anthropology	144	179	180	188	165	151	194	191	190	211	198
Political sciences	102	118	95	102	96	106	83	97	108	117	111
Other	110	117	111	111	110	124	147	133	144	(545)	162
Total engineering	74	53	62	90	99	124	124	151	198	225	242
Aeronautical/astronautical	3	1	0	1	0	1	2	2	5	1	10
Chemical	9	5	8	14	11	17	22	25	35	53	56
Civil	7	6	2	6	6	12	12	19	18	19	17
Electrical	12	12	8	12	14	19	7	14	28	33	30
Mechanical	3	2	4	4	5	12	6	6	22	14	14
Other	40	27	40	53	63	63	75	85	90	105	115

(1) Includes economics, econometrics, and agricultural economics

SOURCE: National Science Foundation, SRS

Table 27. Science and engineering doctorate degree recipients by field and citizenship status: 1977 & 1987

Field	1977					1987				
	Total (1)	U.S. citizens	Non-U.S. citizens			Total (1)	U.S. citizens	Non-U.S. citizens		
			Total	Temporary Residents	Permanent Residents			Total	Temporary Residents	Permanent Residents
Total, all fields	17,416	13,407	3,580	2,601	979	19,222	12,480	5,410	4,351	1,059
Total science	14,773	11,935	2,481	1,828	653	15,506	10,925	3,525	2,819	706
Physical sciences	2,721	2,071	597	406	191	3,210	2,074	943	796	147
Chemistry	1,571	1,238	304	199	105	1,974	1,376	490	399	91
Physics	1,030	727	280	197	83	1,136	626	429	374	55
Astronomy	120	106	13	10	3	100	72	24	23	1
Mathematics	933	690	221	167	54	740	345	352	301	51
Computer sciences	31	24	4	3	1	450	243	174	142	32
Earth, Atmospheric, and Marine sciences	694	559	122	100	22	627	424	149	124	25
Life sciences	4,266	3,396	764	575	189	4,800	3,553	983	776	207
Biological sciences	3,484	2,909	480	318	162	3,824	2,971	648	489	159
Agricultural sciences	782	487	284	257	27	976	582	335	287	48
Psychology	2,989	2,774	119	72	47	3,098	2,695	141	83	58
Social sciences	3,139	2,421	654	505	149	2,581	1,591	783	597	186
Economics	983	646	317	266	51	959	487	393	309	84
Sociology	725	619	95	66	29	423	306	82	54	28
Anthropology	408	397	39	26	13	383	311	44	25	19
Political sciences	614	502	99	67	32	405	257	107	77	30
Other	409	257	104	80	24	411	230	157	132	25
Total engineering	2,648	1,472	1,099	773	326	3,716	1,555	1,885	1,532	353
Aeronautical/astronautical	115	58	55	45	10	142	64	67	59	8
Chemical	306	160	142	97	45	528	281	229	182	47
Civil	269	113	153	109	44	441	146	255	219	36
Electrical	544	307	216	141	75	692	290	323	263	60
Mechanical	270	152	106	80	26	544	201	301	247	54
Other	1,144	682	427	301	126	1,369	573	710	562	148

(1) Includes citizenship status unknown

SOURCE: National Science Foundation, SRS

Table 28. Science and engineering graduate students in all institutions by field and sex: 1977-86

Field	1977	1979	1980	1981	1982	1983	1984	1985	1986
					Total				
Total, all fields	323,927	333,943	340,740	347,595	354,717	367,971	379,924	387,020	397,792
Total sciences	254,785	261,681	265,656	267,116	270,123	274,816	283,105	287,079	292,496
Physical sciences	26,855	26,700	26,952	27,382	28,199	29,475	30,487	31,194	32,710
Chemistry	16,020	16,101	16,222	16,347	17,015	17,810	17,973	18,486	19,016
Physics	9,933	9,699	9,898	10,150	10,306	10,811	11,517	11,660	12,578
Astronomy	649	652	628	597	632	618	639	571	689
Other	253	248	204	288	246	236	358	477	427
Mathematical sciences	16,069	15,063	15,360	15,915	17,199	17,443	17,831	18,106	18,379
Computer sciences	9,108	11,690	13,578	16,437	19,812	23,616	25,364	29,522	30,726
Environmental sciences	13,658	13,854	14,208	14,422	15,174	15,609	15,803	15,741	15,342
Geosciences	8,071	8,532	8,668	8,808	9,621	10,321	10,366	10,383	9,948
Oceanography	1,957	1,867	1,992	2,082	2,091	2,063	2,191	2,090	2,082
Atmospheric sciences	924	852	889	882	889	896	907	964	961
Other	2,706	2,603	2,659	2,650	2,573	2,329	2,339	2,304	2,351
Life sciences (2)	61,076	60,572	60,144	59,079	58,624	58,318	59,073	59,051	60,017
Biological sciences	49,556	48,503	47,890	46,979	46,310	46,028	47,008	47,576	48,692
Agricultural sciences	11,520	12,069	12,254	12,100	12,314	12,290	12,065	11,475	11,325
Psychology	38,628	39,786	40,636	40,691	40,098	41,104	44,305	44,060	43,903
Social sciences	89,391	94,016	94,778	93,190	91,017	89,251	90,242	89,405	91,419
Economics	12,063	12,130	13,132	13,344	13,735	13,587	13,064	12,999	12,830
Sociology/anthropology	16,990	15,738	15,529	15,044	14,327	13,793	13,556	13,272	13,439
Other social sciences	60,338	66,148	66,117	64,802	62,955	61,871	63,622	63,134	65,150
Total engineering	69,142	72,262	75,084	80,479	84,594	93,155	96,820	99,941	105,295
Aeronautical/astronautical	1,518	1,481	1,737	1,883	1,941	2,408	2,431	2,642	2,907
Chemical	5,201	5,605	6,015	6,496	7,189	7,563	7,445	7,156	6,963
Civil	12,712	13,217	13,502	14,515	14,523	15,406	15,739	15,350	15,508
Electrical	17,406	17,789	19,227	20,193	22,017	25,213	26,846	28,540	30,223
Mechanical	8,722	9,251	9,888	10,618	11,467	12,911	13,923	14,111	15,540
Other engineering	23,583	24,919	24,715	26,774	27,457	29,654	30,436	32,142	34,154

Table 28 cont.

Field	1977	1979	1980	1981	1982	1983	1984	1985	1986
					Men				
Total, all fields	238,686	235,515	237,205	237,698	240,868	248,946	254,763	260,669	265,838
Total sciences	173,379	169,280	168,624	165,150	165,247	166,153	169,094	171,708	173,778
Physical sciences	22,816	22,205	22,352	22,366	22,776	23,594	24,202	24,636	25,713
Chemistry	12,936	12,683	12,718	12,544	12,855	13,297	13,263	13,652	13,873
Physics	9,129	8,813	8,950	9,133	9,238	9,609	10,172	10,166	10,994
Astronomy	568	571	546	506	531	526	541	563	568
Other	183	138	138	183	152	162	226	255	278
Mathematical sciences	11,944	11,027	11,272	11,419	12,109	12,222	12,562	12,574	12,795
Computer sciences	7,549	9,367	10,491	12,228	14,366	16,968	18,659	22,326	23,266
Environmental sciences	11,307	10,925	10,940	10,945	11,393	11,634	11,849	11,724	11,328
Geosciences	6,703	6,741	6,743	6,746	7,318	7,808	7,895	7,899	7,575
Oceanography	1,602	1,454	1,505	1,529	1,514	1,497	1,563	1,477	1,431
Atmospheric sciences	850	757	779	758	764	766	769	807	782
Other	2,152	1,973	1,913	1,912	1,797	1,563	1,622	1,541	1,540
Life sciences (2)	42,165	39,960	38,939	37,580	36,335	35,736	35,812	35,445	35,544
Biological sciences	32,712	30,499	29,492	28,210	27,021	26,553	26,875	26,923	27,167
Agricultural sciences	9,453	9,461	9,447	9,370	9,314	9.183	8,937	8,522	8,377
Psychology	20,520	19,427	19,036	17,902	16,980	16,709	17,170	16,609	16,088
Social sciences	57,078	56,369	55,594	52,710	51,288	49,290	48,842	48,396	49,045
Economics	9,749	9,498	10,126	10,139	10,237	10,159	9,791	9,682	9,512
Sociology/anthropology	9,170	8,005	7,641	7,115	6,606	6,293	6,144	6,098	5,926
Other social sciences	38,209	38,866	37,827	35,456	34,445	32,838	32,907	32,616	33,607
Total engineering	65,307	66,235	68,581	72,548	75,621	82,793	85,669	87,961	92,061
Aeronautical/astronautical	1,485	1,432	1,663	1,816	1,831	2,283	2,298	2,475	2,706
Chemical	4,827	4,991	5,336	5,718	6,288	6,547	6,462	6,140	5,931
Civil	11,752	11,752	11,973	12,778	12,614	13,388	13,551	13,046	13,176
Electrical	16,696	16,856	18,244	18,917	20,466	23,157	24,624	26,132	27,324
Mechanical	8,449	8,782	9,354	9,987	10,748	12,106	12,963	13,095	14,385
Other engineering	22,098	22,422	22,011	23,332	23,674	25,312	25,771	27,073	28,539

Table 28 cont.

Field	1977	1979 (1)	1980	1981	1982	1983	1984	1985	1986
					Women				
Total, all fields	85,241	98,428	103,535	109,897	113,849	119,028	125,161	127,350	131,954
Total sciences	81,406	92,401	97,032	101,966	104,876	108,666	114,010	115,369	118,720
Physical sciences	4,039	4,495	4,600	5,016	5,423	5,881	6,285	6,559	6,998
Chemistry	3,084	3,418	3,504	3,803	4,160	4,513	4,710	4,835	5,143
Physics	804	886	948	1,017	1,068	1,202	1,345	1,494	1,585
Astronomy	81	81	82	91	101	92	98	108	121
Other	70	110	66	105	94	74	132	122	149
Mathematical sciences	4,125	4,036	4,088	4,496	5,090	5,221	5,269	5,532	5,584
Computer sciences	1,559	2,323	3,087	4,209	5,446	5,648	6,705	7,196	7,460
Environmental sciences	2,351	2,929	3,268	3,477	3,781	3,975	3,954	4,017	4,014
Geosciences	1,368	1,791	1,925	2,062	2,303	2,513	2,471	2,484	2,373
Oceanography	355	413	487	553	577	566	628	613	651
Atmospheric sciences	74	95	110	124	125	130	138	157	179
Other	554	630	746	738	776	766	717	763	811
Life sciences (2)	18,911	20,612	21,205	21,499	22,289	22,582	23,261	23,606	24,474
Biological sciences	16,844	18,004	18,398	18,769	19,289	19,475	20,133	20,653	21,526
Agricultural sciences	2,067	2,608	2,807	2,730	3,000	3,107	3,128	2,953	2,948
Psychology	18,108	20,359	21,600	22,789	23,118	24,398	27,135	27,452	27,815
Social sciences	32,313	37,647	39,184	40,480	39,729	39,961	41,400	41,007	42,375
Economics	2,314	2,632	3,006	3,205	3,498	3,428	3,274	3,317	3,318
Sociology/anthropology	7,870	7,733	7,888	7,929	7,721	7,500	7,412	7,174	7,514
Other social sciences	22,129	27,282	28,290	29,346	28,510	29,033	30,714	30,516	31,543
Total engineering	3,835	6,027	6,503	7,931	8,973	10,362	11,151	11,981	13,234
Aeronautical/astronautical	33	49	74	67	110	125	133	167	201
Chemical	374	614	679	778	901	1,016	983	1,016	1,032
Civil	960	1,465	1,529	1,737	1,909	2,018	2,189	2,305	2,332
Electrical	710	933	983	1,276	1,551	2,056	2,222	2,408	2,899
Mechanical	273	469	534	631	719	805	961	1,016	1,155
Other engineering	1,485	2,497	2,704	3,442	3,783	4,342	4,663	5,069	5,615

(1) Data were not collected in 1978
(2) Does not include health sciences

SOURCE: National Science Foundation, SRS

Table 29. Full-time science and engineering graduate students in all institutions by field and citizenship status: 1977 & 1986

Field	1977			1986		
	Total	U.S. Citizens	Foreign Citizens	Total	U.S. Citizens	Foreign Citizens
Total, all fields	215,506	178,445	37,061	256,008	183,143	72,868
Total sciences	177,941	154,523	23,418	194,276	148,725	45,554
Physical sciences	22,505	17,809	4,696	27,697	18,369	9,328
Chemistry	13,131	10,544	2,587	15,950	11,531	4,419
Physics	8,649	6,626	2,023	10,937	6,213	4,724
Astronomy	603	532	71	654	494	160
Other	122	107	15	156	131	25
Mathematical sciences	10,365	7,910	2,455	12,456	7,263	5,193
Computer sciences	4,604	3,495	1,109	15,071	9,100	5,971
Environmental sciences	10,556	9,417	1,139	11,265	9,453	1,813
Geosciences	6,495	5,786	709	7,355	6,340	1,015
Oceanography	1,540	1,390	150	1,674	1,365	309
Atmospheric sciences	807	679	128	855	649	206
Other	1,714	1,562	152	1,381	1,099	283
Life sciences (1)	48,170	42,434	5,736	47,703	37,927	9,776
Biological sciences	38,603	34,755	3,848	38,444	31,216	7,228
Agricultural sciences	9,567	7,679	1,888	9,259	6,711	2,548
Psychology	25,710	24,968	742	27,085	25,871	1,215
Social sciences	56,031	48,490	7,541	52,999	40,742	12,257
Economics	8,377	5,556	2,821	9,136	5,056	4,080
Sociology/anthropology	12,069	11,002	1,067	9,233	7,325	1,908
Other social sciences	35,585	31,932	3,653	34,630	28,361	6,269
Total engineering	37,565	23,922	13,643	61,732	34,418	27,314
Aeronautical/astronautical	1,187	711	476	2,152	1,342	810
Chemical	3,873	2,273	1,600	5,579	3,406	2,174
Civil	7,451	5,053	2,398	10,393	5,611	4,783
Electrical	8,528	5,435	3,093	16,374	8,648	7,726
Mechanical	4,883	2,991	1,892	9,647	5,109	4,539
Other engineering	11,643	7,459	4,184	17,587	10,302	7,282

(1) Does not include health sciences

SOURCE: National Science Foundation, SRS

Table 30. Federal obligations for basic research by field: Fiscal years 1977-87

(Thousands of dollars)

Field	1977	1978	1979	1980	1981	1982
Total, all fields	3,258,640	3,698,604	4,192,665	4,674,156	5,041,295	5,481,605
Total sciences	2,920,957	3,306,043	3,758,007	4,208,928	4,515,277	4,871,138
Physical sciences	889,994	941,421	1,050,002	1,220,588	1,324,940	1,393,844
Chemistry	208,695	203,260	224,798	256,922	298,188	312,002
Physics	467,414	518,798	535,624	668,155	735,417	790,741
Astronomy	193,321	209,832	280,643	279,420	274,227	271,114
Other	20,564	9,531	8,937	16,091	17,108	19,987
Mathematics/computer sciences	83,408	97,737	104,164	116,258	140,360	165,064
Mathematics	52,135	55,871	59,964	66,825	79,174	90,862
Computer sciences	31,018	40,294	42,956	46,215	52,205	67,448
Other	255	1,572	1,244	3,218	8,981	6,754
Environmental sciences	387,454	451,278	457,284	522,360	532,833	520,049
Geological sciences	128,720	145,114	157,603	198,335	194,205	177,487
Oceanography	104,593	120,720	119,110	130,678	143,294	154,465
Atmospheric sciences	143,464	163,275	169,172	179,048	173,829	163,195
Other	10,677	22,169	11,399	14,299	21,505	24,902
Life sciences	1,383,365	1,588,390	1,891,777	2,054,425	2,223,848	2,526,017
Biological/agricultural	933,574	1,078,679	1,279,290	1,339,434	1,462,372	1,674,752
Biological sciences	(1)	938,830	1,146,327	1,185,974	1,284,985	1,484,356
Agricultural sciences	(1)	139,849	132,963	153,460	177,387	190,396
Medical sciences	414,789	467,672	560,110	656,963	706,205	793,419
Other	35,002	42,039	52,377	58,028	55,271	57,846
Psychology	55,717	67,473	75,069	84,206	90,992	89,875
Social sciences	95,513	124,347	129,718	147,180	136,951	120,198
Economics	29,085	33,564	32,676	40,010	34,112	38,950
Sociology	15,936	18,588	18,406	25,377	22,593	18,739
Anthropology	8,040	11,957	12,488	14,234	13,078	13,063
Other	42,452	60,238	66,148	67,559	67,168	49,446
Other sciences, n.e.c.	25,506	35,397	49,993	63,911	65,353	56,091
Total engineering	337,683	392,561	434,658	465,228	526,018	610,467
Aeronautical/astronautical	59,700	97,756	113,604	131,341	146,463	171,310
Chemical	24.034	24,104	24,611	26,148	31,330	35,184
Civil	10,356	10,842	14,164	21,963	23,362	31,977
Electrical	55,139	57,405	62,025	70,586	78,508	93,625
Mechanical	29,628	29,488	35,891	42,227	47,378	53,120
Metallurgy/materials	124,888	134,539	151,117	121,337	138,480	155,888
Other	33,938	38,427	33,246	51,626	60,497	69,363

Table 30 cont.

Field	1983	1984	1985	1986	1987
Total, all fields	6,260,131	7,067,359	7,818,682	8,153,076	8,821,058
Total sciences	5,570,628	6,222,368	6,934,446	7,184,568	7,799,038
Physical sciences	1,587,183	1,727,982	1,815,239	1,914,426	2,122,818
Chemistry	362,188	403,367	425,019	433,359	464,253
Physics	855,104	921,430	959,884	1,003,363	1,104,210
Astronomy	354,466	379,553	400,676	453,050	530,104
Other	15,425	23,632	29,660	24,654	24,251
Mathematics/computer sciences	208,129	240,806	259,998	293,389	299,972
Mathematics	100,906	113,865	130,293	142,422	163,270
Computer sciences	90,441	104,789	116,071	131,401	116,564
Other	16,782	22,152	13,634	19,566	20,138
Environmental sciences	580,050	656,731	699,675	749,093	794,858
Geological sciences	178,292	198,010	249,988	265,478	267,905
Oceanography	195,615	220,131	219,258	224,304	249,040
Atmospheric sciences	172,633	192,172	209,215	240,417	257,951
Other	33,510	46,418	21,214	18,894	19,962
Life sciences	2,891,336	3,287,634	3,796,595	3,858,783	4,168,840
Biological/agricultural	1,928,774	2,174,668	2,515,484	2,542,950	2,755,758
Biological sciences	1,714,529	1,956,534	2,231,999	2,277,203	2,478,730
Agricultural sciences	214,245	218,134	283,485	265,747	277,028
Medical sciences	878,922	1,015,300	1,145,437	1,196,592	1,282,651
Other	83,640	97,666	125,674	119,241	130,431
Psychology	92,927	107,861	132,840	132,955	150,287
Social sciences	137,723	132,581	140,684	113,464	131,480
Economics	40,982	29,671	34,274	26,262	30,249
Sociology	32,772	33,920	32,438	29,996	34,691
Anthropology	11,175	16,839	15,822	11,196	12,071
Other	52,794	52,151	58,150	46,010	54,469
Other sciences, n.e.c.	73,280	68,773	99,415	122,458	130,783
Total engineering	689,503	844,991	884,236	968,508	1,022,020
Aeronautical/astronautical	191,065	277,887	233,055	278,714	294,502
Chemical	50,402	55,534	74,448	73,026	78,743
Civil	32,426	41,861	43,601	45,165	48,767
Electrical	95,820	130,365	144,890	156,323	169,991
Mechanical	60,722	64,129	88,204	83,585	83,515
Metallurgy/materials	182,892	187,340	211,852	228,479	233,324
Other	76,176	87,875	88,186	103,216	113,178

(1) Not separately available

SOURCE: National Science Foundation, SRS

Table 31. Federal obligations for basic research by field and selected agency: FY 1987 est.

(Thousands of dollars)

Field	Federal Agency (1)									
	Total	USDA	DOC	DoD	DOE	HHS	DOI	EPA	NASA	NSF
Total, all fields	8,821,058	454,635	23,814	861,220	1,078,237	3,661,036	140,874	38,439	1,068,800	1,378,329
Total sciences	7,799,038	442,782	20,769	532,364	959,464	3,622,735	91,090	32,351	794,677	1,187,405
Physical sciences	2,122,818	35,913	19,695	173,996	824,163	93,761	7,669	6,512	580,440	362,322
Chemistry	464,253	34,065	7,661	69,723	120,974	86,630	6,096	5,238	8,448	120,485
Physics	1,104,210	1,848	11,592	80,545	702,870	7,097	1,573	1,274	138,598	158,813
Astronomy	530,104	(2)	442	13,275	(2)	(2)	(2)	(2)	423,292	79,681
Other	24,251	(2)	(2)	10,453	319	34	(2)	(2)	10,102	3,343
Mathematics/computer sciences	299,972	4,394	883	100,143	38,897	7,348	1,770	(2)	22,327	121,105
Mathematics	163,270	4,021	547	48,515	28,088	7,136	393	(2)	806	71,242
Computer sciences	116,564	373	336	34,331	10,706	212	1,377	(2)	30,252	48,394
Other	20,138	(2)	(2)	17,297	103	(2)	(2)	(2)	1,269	1,469
Environmental sciences	794,858	5,193	92	129,751	27,213	(2)	77,451	11,456	160,154	378,345
Geological sciences	267,905	2,955	92	41,935	21,746	(2)	60,898	2,930	52,020	81,658
Oceanography	249,040	(2)	(2)	49,634	2,651	(2)	16,553	101	8,725	169,948
Atmospheric sciences	257,951	2,238	(2)	37,199	1,631	(2)	(2)	8,425	81,880	126,474
Other	19,952	(2)	(2)	983	1,185	(2)	(2)	(2)	17,529	265
Life sciences	4,168,840	384,205	(2)	90,775	68,518	3,292,669	4,200	14,366	26,871	241,837
Biological/agricultural	2,755,758	370,730	(2)	40,230	65,735	1,968,792	4,200	13,459	21,111	239,736
Biological sciences	2,475,730	99,939	(2)	40,230	(2)	1,968,503	4,200	11,457	20,467	239,736
Agricultural sciences	277,028	270,791	(2)	(2)	(2)	289	(2)	2,002	644	(2)
Medical sciences	1,282,651	13,475	(2)	50,545	2,783	1,201,703	(2)	907	2,387	(2)
Other	130,431	(2)	(2)	(2)	(2)	122,174	(2)	(2)	3,373	2,101
Psychology	150,287	48	99	28,132	(2)	104,890	(2)	(2)	2,085	11,914
Social sciences	131,480	13,029	(2)	(2)	(2)	39,916	(2)	(2)	95	38,715
Economics	30,249	10,169	(2)	(2)	(2)	4,163	(2)	(2)	(2)	11,347
Sociology	34,691	2,759	(2)	(2)	(2)	26,125	(2)	(2)	(2)	4,507
Anthropology	12,071	(2)	(2)	(2)	(2)	935	(2)	(2)	(2)	8,119
Other	54,469	101	(2)	(2)	(2)	8,693	(2)	(2)	95	14,742
Other sciences, n.e.c.	130,783	(2)	(2)	9,567	673	84,151	(2)	17	2,705	33,167
Total engineering	1,022,020	11,853	3,045	328,856	118,823	38,301	49,784	6,088	274,123	190,924
Aeronautical/astronautical	294,502	(2)	(2)	41,773	43	(2)	(2)	(2)	252,550	136
Chemical	78,743	2,585	337	16,855	24,423	(2)	100	2,584	1,088	30,951
Civil	48,767	2,463	2,463	11,766	649	(2)	(2)	3,027	346	30,339
Electrical	169,991	49	983	120,785	1,380	(2)	(2)	(2)	4,712	42,082
Mechanical	83,515	628,628	70	38,840	15,456	(2)	(2)	(2)	3,490	25,031
Metallurgy/materials	233,324	(2)	1,142	98,568	59,641	(2)	23,145	(2)	7,709	43,054
Other	113,178	6,128	513	269	17,231	38,301	26,539	477	4,308	19,331

(1) USDA = Agriculture; DOC - Commerce; DoD = Defense; DOE = Energy; HHS = Health and Human Services; DOI = Interior; EPA = Environmental Protection Agency; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation

(2) None reported.

SOURCE: National Science Foundation, SRS

Table 32. Federal obligations for applied research by field: Fiscal years 1977-87

(Thousands of dollars)

Field	1977	1978	1979	1980	1981	1982
Total, all fields	5,255,475	5,908,154	6,342,340	6,923,222	7,171,485	7,540,580
Total sciences	3,480,241	3,879,544	4,205,368	4,558,319	4,626,049	4,764,504
Physical sciences	640,177	704,226	742,552	780,024	895,594	1,106,537
Chemistry	162,027	201,733	218,820	197,614	188,689	169,152
Physics	398,846	423,638	487,117	514,391	610,221	819,767
Astronomy	3,984	3,769	3,786	6,251	6,800	4,670
Other	75,320	75,086	32,829	61,768	89,884	112,948
Mathematics/computer sciences	112,472	118,543	106,137	124,685	138,565	185,016
Mathematics	44,279	37,481	24,215	24,101	38,552	37,269
Computer sciences	58,337	66,973	63,310	82,378	69,315	103,490
Other	9,856	14,089	18,612	18,206	30,698	44,257
Environmental sciences	518,547	573,288	643,700	738,597	588,247	628,254
Geological sciences	140,710	171,246	201,064	203,420	201,877	180,069
Oceanography	91,301	103,117	101,369	131,446	118,390	106,813
Atmospheric sciences	174,902	155,919	179,544	230,465	199,603	262,634
Other	111,634	143,006	161,723	173,226	68,377	78,738
Life sciences	1,624,384	1,838,743	1,956,504	2,137,910	2,211,792	2,219,482
Biological/agricultural	843,993	945,339	1,041,032	1,168,124	1,249,396	1,137,018
Biological sciences	(1)	734,493	772,475	874,378	931,966	778,436
Agricultural sciences	(1)	210,846	268,557	293,746	317,430	358,582
Medical sciences	723,971	819,775	820,505	879,925	903,725	979,606
Other	56,420	73,629	94,967	89,861	58,671	102,858
Psychology	100,484	109,194	122,315	114,803	117,906	128,521
Social sciences	330,612	365,139	397,592	376,631	360,476	265,741
Economics	113,769	129,616	149,239	152,761	172,610	118,152
Sociology	36,221	41,745	46,117	46,058	42,397	33,266
Anthropology	4,339	7,569	4,855	2,945	1,459	1,501
Other	176,283	186,209	197,381	174,867	144,010	112,822
Other sciences, n.e.c.	153,565	170,411	236,568	285,669	313,469	230,953
Total engineering	1,775,234	2,028,610	2,136,972	2,364,903	2,545,436	2,776,076
Aeronautical/astronautical	508,137	550,243	762,433	879,118	867,050	860,582
Chemical	80,767	125,327	89,680	70,187	116,294	59,934
Civil	106,998	131,576	110,842	136,818	135,750	169,942
Electrical	327,588	375,222	355,840	446,556	478,166	518,561
Mechanical	169,545	204,658	159,985	165,751	157,268	148,108
Metallurgy/materials	168,945	151,434	98,229	114,847	117,492	153,241
Other	413,254	490,150	559,963	551,626	673,416	865,708

Table 32 cont.

Field	1983	1984	1985	1986	ESTIMATES 1987
Total, all fields	7,993,394	7,911,414	8,314,739	8,349,123	8,990,931
Total sciences	5,165,898	5,132,350	5,581,345	5,578,685	6,034,319
Physical sciences	1,304,256	1,241,032	1,230,771	1,154,627	1,147,133
Chemistry	158,103	203,044	225,378	229,038	231,755
Physics	999,462	914,999	856,143	802,560	782,568
Astronomy	2,950	2,739	14,067	15,110	15,551
Other	143,741	120,250	135,183	107,919	117,259
Mathematics/computer sciences	211,287	199,518	314,900	322,023	354,496
Mathematics	32,605	37,118	53,356	42,103	56,232
Computer sciences	124,114	109,739	164,199	171,025	164,808
Other	54,568	52,661	97,345	108,895	133,456
Environmental sciences	671,153	619,182	703,999	732,567	758,297
Geological sciences	155,245	160,980	178,995	178,423	178,901
Oceanography	147,895	143,358	179,250	205,356	216,133
Atmospheric sciences	288,051	241,960	276,767	280,888	287,874
Other	79,962	72,884	68,987	67,900	75,389
Life sciences	2,286,595	2,348,314	2,575,903	2,605,535	2,909,563
Biological/agricultural	1,135,626	1,150,336	1,239,806	1,318,359	1,435,425
Biological sciences	784,653	856,508	913,958	980,258	1,112,078
Agricultural sciences	350,973	293,828	325,848	338,101	323,347
Medical sciences	1,048,531	1,097,538	1,223,057	1,163,829	1,329,882
Other	102,438	100,440	113,050	123,347	144,256
Psychology	147,944	158,811	194,284	201,015	215,097
Social sciences	297,545	303,758	319,336	302,045	352,054
Economics	124,569	117,627	125,378	104,989	107,694
Sociology	35,043	36,307	34,022	36,989	48,521
Anthropology	1,624	1,740	2,129	2,437	2,465
Other	136,309	148,084	157,807	157,630	193,374
Other sciences, n.e.c.	247,118	261,735	242,158	260,873	297,679
Total engineering	2,827,496	2,779,064	2,733,394	2,770,438	2,956,612
Aeronautical/astronautical	950,987	979,291	929,679	1,023,739	1,205,775
Chemical	94,592	88,916	179,886	172,813	170,074
Civil	156,039	160,950	172,978	157,782	144,366
Electrical	519,124	499,679	481,924	518.096	559,119
Mechanical	205,673	126,341	178,791	152,955	143,694
Metallurgy/materials	149,632	153,740	227,360	216,562	216,777
Other	751,449	770,147	562,776	528,491	516,807

(1) Not separately available

SOURCE: National Science Foundation, SRS

Table 33. Federal obligations for applied research by field and selected agency: FY 1987 est.

(Thousand of dollars)

Field	Federal Agency (1)									
	Total	USDA	DOC	DoD	DOE	HHS	DOI	EPA	NASA	NSF
Total, all fields	8,990,931	490,681	329,086	2,333,861	1,072,438	2,160,249	244,037	171,202	1,410,600	84,371
Total sciences	6,034,319	467,673	287,712	1,163,949	705,402	2,135,737	192,722	133,250	382,891	51,172
Physical sciences	1,147,133	30,764	34,937	376,164	534,060	34,708	16,906	18,820	82,770	12,875
Chemistry	231,755	28,744	10,009	82,018	35,545	30,699	14,597	17,711	6,032	3,545
Physics	782,568	2,020	24,761	201,476	493,661	3,992	2,309	1,109	43,467	8,833
Astronomy	15,551	(2)	167	1,219	(2)	(2)	(2)	(2)	13,872	293
Other	117,259	(2)	(2)	91,451	4,854	17	(2)	(2)	19,379	204
Mathematics/computer sciences	354,496	9,999	12,324	237,146	5,272	7,046	8,396	5,137	52,095	2,558
Mathematics	56,232	9,482	5,147	10,063	(2)	5,692	1,295	425	18,090	1,080
Computer sciences	164,808	517	4,426	103,899	4,834	1,354	7,101	4,712	29,862	1,478
Other	133,456	(2)	2,751	123,184	438	(2)	(2)	(2)	4,143	(2)
Environmental sciences	758,297	7,408	214,513	163,748	69,202	(2)	102,762	37,048	155,758	6,916
Geological sciences	178,901	5,012	4,493	37,047	27,709	(2)	88,738	3,246	9,671	2,985
Oceanography	216,133	(2)	137,556	42,418	4,283	(2)	8,324	1,907	19,522	2,123
Atmospheric sciences	287,874	2,396	66,835	65,341	32,516	(2)	5,700	31,895	81,509	1,682
Other	75,389	(2)	5,629	18,942	4,694	(2)	(2)	(2)	45,056	126
Life sciences	2,909,563	346,211	18,290	182,476	91,356	1,739,650	63,148	69,908	79,270	11,428
Biological/agricultural	1,435,425	333,569	16,680	25,236	56,639	749,382	63,148	57,410	10,533	9,791
Biological sciences	1,112,078	115,624	5,890	25,236	56,305	749,226	61,047	55,326	10,465	9,791
Agricultural sciences	323,347	217,945	10,790	(2)	334	156	2,101	2,084	68	(2)
Medical sciences	1,329,882	12,642	1,610	119,302	22,120	944,598	(2)	12,498	34,915	(2)
Other	144,256	(2)	(2)	37,938	12,587	45,670	(2)	(2)	33,822	1,637
Psychology	215,097	148	230	71,885	(2)	117,694	(2)	1,837	1,258	427
Social sciences	352,054	73,143	2,830	9,683	(2)	110,864	1,510	500	11,262	5,812
Economics	107,694	65,198	1,423	1,230	(2)	5,561	(2)	500	3	2,238
Sociology	48,521	7,033	242	819	(2)	25,484	500	(2)	(2)	778
Anthropology	2,465	(2)	(2)	(2)	(2)	845	1,000	(2)	(2)	520
Other	193,374	912	1,165	7,634	(2)	78,974	10	(2)	11,259	2,276
Other sciences, n.e.c.	297,679	(2)	4,588	122,847	5,512	125,775	(2)	(2)	478	11,156
Total engineering	2,956,612	23,008	41,374	1,169,912	367,036	24,512	51,315	36,646	1,027,709	33,199
Aeronautical/astronautical	1,205,775	(2)	(2)	220,872	182	(2)	(2)	(2)	980,650	45
Chemical	170,074	3,869	2,291	30,899	102,613	(2)	4,819	18,252	106	6,701
Civil	144,366	3,291	4,882	42,494	37,093	(2)	5,112	13,700	(2)	5,959
Electrical	559,119	139	10,514	499,421	29,920	(2)	576	413	2,267	10,099
Mechanical	143,694	2,307	775	108,017	6,690	(2)	572	3,091	5,333	4,841
Metallurgy/materials	216,777	(2)	8,876	139,992	30,137	(2)	17,865	465	14,251	2,938
Other	516,807	13,402	14,036	128,217	160,401	24,512	22,371	725	25,102	2,616

(1) USDA = Agriculture; DOC = Commerce; DoD = Defense; DOE = Energy; HHS = Health and Human Services; DOI = Interior; EPA = Environmental Protection Agency; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation

(2) None reported

SOURCE: National Science Foundation, SRS

Table 34. Funds for basic research in industry by field of science and engineering: 1975-85

(Dollars in millions)

Field	1975	1976	1977	1979	1981	1983	1985
Total, all fields	730	819	911	1,158	1,614	2,104	2,628
Total sciences	538	614	677	865	1,156	1,422	1,700
Physical sciences	320	360	405	527	746	902	899
Chemistry	228	253	285	381	485	555	514
Physics	(1)	(1)	(1)	(1)	(1)	(1)	379
Astronomy	(1)	(1)	(1)	(1)	(1)	(1)	6
Mathematics	14	18	19	20	26	27	34
Computer sciences	(1)	(1)	(1)	(1)	(1)	(1)	47
Environmental sciences	15	17	19	13	18	29	21
Atmospheric sciences	6	6	5	5	12	16	(2)
Geological sciences	5	7	7	6	6	13	13
Oceanography	3	4	7	2	0	0	(2)
Life sciences	122	134	156	177	208	276	(2)
Biological sciences	85	102	128	136	157	241	319
Clinical medical sciences	37	32	28	40	51	35	(2)
Other sciences	67	85	78	128	158	188	(2)
Total engineering	191	204	233	292	458	682	928

(1) Not seperately available but included in total
(2) Data have been withheld due to imputation of 50 percent or more

NOTE: Data not collected for 1978, 1980, 1982, or 1984
SOURCE: National Science Foundation, SRS

Table 35. Funds for basic research in industry by type of industry and field: 1985
(Dollars in millions)

Industry	SIC Code	Total	Physical sciences	Mathematics	Computer sciences	Environmental sciences	Life sciences	Other sciences	Engineering
Total	--	2,628	899	34	47	21	(2)	(2)	928
Food and kindred products	20,21	64	24	2	0	0	(2)	(2)	9
Textiles and apparel	22,23	2	(2)	0	0	0	0	(2)	(2)
Lumber, wood products, and furniture	24,25	(2)	0	0	0	0	0	0	(2)
Paper and allied products	26	70	(1)	0	0	0	(1)	(1)	17
Chemicals and allied products	28	706	219	(3)	0	0	(2)	(2)	15
Industrial chemicals	281-82,286	362	158	(3)	0	0	(2)	(2)	9
Drugs and medicines	283	292	21	0	0	0	(2)	(2)	4
Other chemicals	284-85,287-89	52	(2)	0	0	0	(2)	(2)	1
Petroleum refining	29	161	(1)	(3)	(3)	(1)	(2)	(1)	(1)
Rubber products	30	(1)	(1)	0	0	0	0	(2)	0
Stone, clay, and glass products	32	53	(1)	(1)	0	0	(1)	(1)	(1)
Primary metals	33	67	(1)	0	(1)	0	0	0	(1)
Ferrous metals and products	331-32,3398-99	(1)	1	0	(1)	0	0	0	(1)
Nonferrous metals and products	333-36	(1)	(1)	0	2	0	0	0	(1)
Fabricated metal products	34	7	0	0	0	0	0	(2)	7
Machinery	35	174	(1)	(1)	11	2	(1)	(1)	43
Office, computing, and accounting machines	357	(1)	(1)	(1)	11	(1)	(1)	0	(1)
Machinery, except electrical	351-56,358-59	(1)	31	0	(3)	(1)	(2)	(1)	(1)
Electrical equipment	36	504	117	15	34	1	(2)	(2)	288
Radio and TV receiving	365	(1)	(1)	0	0	0	0	0	0
Communications	366	286	83	13	31	0	0	(2)	89
Electronic components	367	(1)	(1)	0	0	0	0	0	(2)
Other electrical	361-64,369	45	22	1	3	1	(2)	(2)	15
Transportation equipment	37	353	(1)	4	(1)	(1)	(1)	(1)	172
Motor vehicles and equipment	371	(1)	(1)	(1)	(1)	(1)	(1)	(1)	11
Other transportation	373-75,379	(1)	(3)	0	0	0	0	0	0
Aircraft and missiles	372,376	304	78	(1)	7	2	(2)	(1)	161
Professional/scientific instruments	38	(2)	(2)	0	(2)	(2)	(2)	(2)	(2)
Other manufacturing	27,31,39	8	(2)	(2)	0	0	0	(2)	(2)
Nonmanufacturing	10-17,41-67,737, 739,807,891	(2)	(2)	(3)	0	(2)	(2)	(2)	(2)

(1) Data have been withheld to avoid disclosing operations of individual companies
(2) Data have been withheld due to imputation of 50 percent or more
(3) Less than $0.5 million

SOURCE: National Science Foundation, SRS

Table 36. Federal obligations to universities and colleges for research and development by field and selected agency: Fiscal year 1986

(Dollars in thousands)

Field	Total	USDA	DOC	DoD	DOE	HHS	DOI	EPA	NASA	NSF
Total, all fields	6,538,280	277,126	68,281	1,149,664	346,928	3,212,140	40,860	67,945	254,027	983,933
Total sciences	5,438,215	264,891	67,017	400,106	278,049	3,177,250	29,702	63,949	194,203	835,952
Physical sciences	770,254	12,365	3,955	89,016	195,252	83,511	4,894	1,932	94,120	285,209
Astronomy	78,435	0	1,462	2,920	0	0	0	0	49,286	24,767
Chemistry	255,593	12,313	1,208	26,591	27,663	81,826	4,894	880	4,258	95,960
Physics	379,289	52	1,285	56,095	167,366	1,620	0	383	29,422	123,066
Other	56,937	0	0	3,410	223	65	0	669	11,154	41,416
Mathematical sciences	99,586	2,645	368	24,449	12,896	5,535	0	124	2,810	50,592
Computer sciences	79,413	0	1,312	16,554	6,550	0	0	225	8,630	45,038
Environmental sciences	468,882	1,175	48,119	95,444	17,793	0	15,983	26,143	64,460	192,850
Atmospheric sciences	124,657	1,092	6,754	19,581	3,911	0	1,313	25	40,868	47,393
Geological sciences	118,401	83	0	6,087	10,486	0	9,968	3,551	15,126	69,905
Oceanography	121,855	0	2,858	68,958	2,857	0	0	51	3,318	43,813
Other	103,969	0	38,507	818	539	0	4,702	22,516	5,148	31,739
Life sciences	3,450,126	220,798	7,838	86,424	34,783	2,810,767	8,462	28,622	19,312	167,088
Agricultural sciences	147,717	114,867	0	1,488	0	61	5,972	442	637	0
Biological sciences	1,923,432	92,870	1,036	20,651	25,263	1,576,972	2,490	22,299	11,286	166,107
Medical sciences	1,319,873	13,061	0	63,853	8,268	1,219,500	0	1,559	3,329	143
Other	59,104	0	6,802	432	1,252	14,234	0	4,322	4,060	838
Psychology	138,338	0	0	12,119	0	111,709	3	0	1,940	10,274
Social sciences	173,248	27,908	4,239	2,292	0	57,914	360	1,253	86	28,727
Economics	43,764	20,933	4,239	547	0	3,392	123	558	3	9,074
Sociology	34,580	6,975	0	12	0	20,094	237	0	0	3,684
Anthropology	6,455	0	0	0	0	760	0	0	0	5,695
Other	88,449	0	0	1,733	0	33,668	0	695	83	10,274
Other sciences, n.e.c.	258,368	0	1,186	73,808	10,775	107,824	0	5,650	2,845	56,174
Total, engineering	1,100,065	12,235	1,264	749,558	68,879	34,880	11,158	3,996	59,824	147,981
Aeronautical/astronautical	66,404	0	0	38,703	30	0	0	0	26,580	441
Chemical	50,379	0	94	3,767	17,360	0	270	81	1,119	27,688
Civil	35,402	0	216	4,648	649	0	224	2,413	309	24,107
Electrical	212,175	30	126	173,911	626	0	108	0	6,702	30,662
Mechanical	56,416	15	61	19,358	8,086	0	123	0	5,300	23,076
Metallurgy/materials	99,002	0	454	31,543	17,132	0	10,433	138	10,446	28,383
Other	580,287	12,190	313	477,628	24,996	34,880	0	1,364	9,368	13,624

NOTE: USDA = Agriculture; DOC = Commerce; DoD = Defense; DOE = Energy; HHS = Health and Human Services; DOI = Interior; EPA = Environmental Protectional Agency; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation

SOURCE: National Science Foundation, SRS

Table 37. R&D expenditures at universities and colleges by field: Fiscal years 1976-86 (Dollars in thousands)

Field	1976	1977	1979 (1)	1980	1981	1982	1983	1984	1985	1986
Total, all fields	3,729,007	3,568,480	5,361,408	6,060,629	6,809,552	7,266,122	7,798,179	8,508,380	9,524,293	10,718,402
Total sciences	3,297,280	3,568,480	4,593,001	5,195,705	5,848,875	6,240,609	6,687,368	7,301,276	8,137,576	9,109,309
Physical sciences	379,379	423,457	601,904	677,293	764,673	822,584	897,099	991,918	1,133,913	1,261,376
Astronomy	26,294	32,361	48,459	58,740	67,337	73,237	74,177	80,457	91,049	96,335
Chemistry	140,142	159,353	206,421	243,982	283,899	308,091	334,663	367,843	411,615	460,084
Physics	183,050	201,655	292,033	322,230	356,859	365,897	414,165	469,403	550,045	622,296
Other	29,893	30,088	54,991	52,341	56,578	75,359	74,094	74,215	81,204	82,661
Mathematical sciences	42,491	52,312	78,477	78,667	88,793	98,568	108,038	124,398	129,799	152,204
Computer sciences	44,503	55,563	97,921	114,196	132,884	149,259	175,236	222,480	279,181	315,360
Environmental sciences (2)	288,531	319,398	452,915	509,038	548,920	557,817	618,962	649,601	705,357	774,177
Atmospheric sciences	---	---	---	67,459	78,257	85,443	97,660	102,875	109,549	124,826
Geological sciences	---	---	---	188,226	189,692	195,507	216,159	225,525	250,534	261,849
Oceanography	---	---	---	171,668	187,463	197,701	223,994	238,157	260,306	275,524
Other	---	---	---	81,685	96,508	79,116	81,149	83,044	84,968	111,978
Life sciences	2,101,695	2,258,806	2,832,523	3,217,658	3,670,596	3,969,593	4,233,143	4,617,226	5,155,422	5,746,125
Agricultural sciences	412,867	460,647	602,485	679,880	772,434	844,040	895,520	930,245	1,028,549	1,122,363
Biological sciences	710,724	772,290	914,806	1,030,429	1,186,333	1,286,548	1,408,240	1,555,330	1,697,690	1,832,910
Medical sciences	897,376	950,907	1,237,556	1,414,345	1,599,203	1,717,072	1,801,576	1,989,803	2,259,525	2,578,240
Other	80,728	74,962	77,676	93,004	112,626	121,933	127,807	141,848	169,658	212,612
Psychology	77,888	85,133	100,531	111,290	128,328	132,322	138,505	146,884	162,047	180,453
Social sciences	262,261	268,087	295,138	341,445	370,351	358,286	354,348	372,336	389,790	459,304
Economics	65,447	72,124	83,089	90,158	99,496	95,590	96,476	109,215	115,789	132,377
Sociology	66,246	61,939	74,641	83,556	94,658	80,252	78,327	74,626	78,643	88,311
Other	130,568	134,024	137,408	162,731	176,197	182,444	179,545	188,495	195,358	238,616
Other sciences, n.e.c.	100,532	105,724	133,592	146,118	144,330	152,180	162,037	176,433	182,066	220,311
Total, engineering (2)	431,727	498,473	768,407	864,924	960,677	1,025,513	1,110,811	1,207,104	1,386,717	1,609,093
Aeronautical/astronautical	---	---	---	46,285	45,481	60,226	65,009	66,344	75,716	86,519
Chemical	---	---	---	67,557	83,207	83,548	90,767	96,199	108,927	152,122
Civil	---	---	---	88,641	108,174	108,711	109,921	133,692	147,428	171,012
Electrical	---	---	---	184,050	193,080	223,862	259,283	291,795	336,932	398,203
Mechanical	---	---	---	146,163	149,128	142,171	149,881	176,682	205,625	224,206
Other	---	---	---	332,228	381,607	406,995	435,950	442,391	514,088	604,031

(1) Data not comparable for 1978
(2) Detail not separately available prior to 1980

SOURCE: National Science Foundation, SRS

Table 38. Federally financed R&D expenditures at universities an
colleges by fields: Fiscal years 1978-86
(Dollars in thousands)

Field	1976	1977	1979 (1)	1980	1981	1982	1983	1984	1985	1986
Total, all fields	2,511,867	2,726,126	3,595,271	4,097,011	4,556,889	746,803	4,952,731	5,385,678	5,997,773	6,633,347
Total sciences	2,221,349	2,389,401	3,068,907	3,501,565	3,894,606	48,860	4,215,647	4,607,561	5,141,370	5,664,873
Physical sciences	305,407	338,782	490,680	554,819	618,053	648,917	697,447	778,610	882,504	975,516
Chemistry	107,867	121,453	156,516	189,427	216,052	230,302	247,652	277,957	307,214	337,913
Physics	156,102	171,910	252,518	279,890	308,549	306,025	339,909	388,188	454,993	509,574
Astronomy	18,351	23,230	36,245	44,441	47,828	51,675	50,370	53,111	60,112	64,009
Other	23,087	22,189	45,401	41,061	45,624	60,915	59,516	59,353	60,186	64,021
Mathematical sciences	32,882	40,638	60,431	61,114	67,672	71,837	76,397	91,064	95,691	112,364
Computer sciences	32,925	37,546	69,192	76,982	93,452	106,918	127,697	161,555	193,154	227,428
Environmental sciences	211,822	238,591	329,154	372,533	391,727	391,159	426,847	450,967	477,550	520,137
Geological sciences	(2)	(2)	(2)	131,272	127,927	126,996	135,808	139,410	152,825	150,942
Oceanography	(2)	(2)	(2)	132,726	145,923	153,574	171,352	183,582	191,791	207,095
Atmospheric sciences	(2)	(2)	(2)	55,524	58,690	68,297	75,943	62,107	86,431	99,485
Other	(2)	(2)	(2)	53,011	59,187	42,292	43,744	45,868	46,504	62,615
Life sciences	1,380,846	1,473,984	1,818,779	2,094,873	2,362,586	492,608	2,563,362	2,796,038	3,140,747	3,439,947
Biological sciences	522,172	575,129	664,675	763,373	865,465	920,822	983,318	1,087,778	1,192,986	1,278,995
Agricultural sciences	122,538	132,772	184,676	211,897	233,656	254,756	259,663	270,074	298.377	298,075
Medical sciences	677,509	712,327	914,905	1,056,561	1,187,179	238,622	1,242,736	1,349,158	1,547,246	1,738,382
Other	58,627	53,756	54,523	63,042	76,286	78,408	77,645	89,028	102,138	124,495
Psychology	59,367	63,648	72,257	81,193	92,457	89,086	90,599	98,379	107,480	118,449
Social sciences	138,255	138,205	155,074	181,627	186,978	161,795	147,573	144,892	154,647	166,948
Economics	29,132	31,595	40,026	43,430	44,508	41,199	37,072	41,953	42,450	42,878
Sociology	41,115	37,854	47,144	57,140	56,353	45,965	42,405	38,559	40,256	43,685
Other	68,008	68,756	67,904	81,057	86,117	74,631	68,096	64,381	71,940	80,386
Other sciences, n.e.c.	59,845	58,007	73,340	78,424	81,681	86,540	85,725	86,056	89,597	104,083
Total engineering	290,518	336,725	526,364	595,446	662,283	697,943	737,084	778,118	856,402	968,474
Aeronautical/astronautical	(2)	(2)	(2)	35,610	35,262	47,889	51,902	52,183	59,719	67,345
Chemical	(2)	(2)	(2)	46,057	55,162	49,615	51,977	54,289	57,620	66,135
Civil	(2)	(2)	(2)	58,920	67,906	58,996	58,060	74,791	81,202	91,517
Electrical	(2)	(2)	(2)	139,621	145,390	173,799	191,871	207,267	228,574	265,885
Mechanical	(2)	(2)	(2)	99,774	102,976	97,606	101,276	117,734	132,106	144,529
Other	(2)	(2)	(2)	215,464	255,587	270,038	281,998	271,853	297,181	333,063

(1) Comparable data unavailable for 1978
(2) Subfield detail unavailable

SOURCE: National Science Foundation, SRS

Table 39. Total and Federally financed R&D expenditures in computer science at universities and colleges: fiscal years 1983-86

(Dollars in Thousands)

Institutional ranking	Total				Federally financed			
	1986	1985	1984	1983	1986	1985	1984	1983
Total, all institutions	315,360	279,181	222,480	175,236	227,428	193,154	161,555	127,697
1. Johns Hopkins University	49,403	47,090	39,624	34,444	49,362	45,754	39,510	34,312
2. Carnegie-Mellon Univ	28,910	24,663	18,725	15,087	19,129	16,458	12,551	10,822
3. Univ of Southern Cal	22,566	20,013	17,364	2,724	19,494	17,481	14,917	2,059
4. New Mexico State Univ	17,158	14,242	12,399	10,118	14,005	11,672	11,095	8,410
5. Univ of Ill Urbana	15,897	10,361	7,376	5,847	7,413	3,755	3,213	2,865
6. Stanford University	12,462	11,747	11,167	6,813	10,908	10,148	9,468	6,813
7. Mass Inst of Technology	10,869	10,920	9,783	8,498	8,221	7,855	7,804	7,142
8. Cornell University	10,369	5,221	2,457	1,831	8,461	4,278	2,006	1,524
9. Georgia Institute of Tech	10,085	7,285	6,796	6,375	5,588	4,055	3,935	3,808
10. Univ of Texas at Austin	8,952	9,509	5,791	3,980	3,819	3,533	2,451	2,182
Total, 1st 10 insts.	186,671	161,051	131,482	95,717	146,400	124,989	106,950	79,977
11. New York University	6,110	4,518	3,170	2,326	5,430	4,228	3,159	2,326
12. Univ of Mass at Amherst	5,804	3,595	2,880	1,861	4,482	2,462	1,912	1,613
13. Univ of MD College Park	5,191	4,715	3,730	3,444	2,860	2,756	2,088	1,905
14. Univ of Pennsylvania	4,952	4,968	2,894	1,851	4,278	4,064	2,270	1,193
15. Yale University	4,881	4,105	3,431	3,391	4,553	3,778	3,231	2,889
16. Univ of NC at Chapel Hill	4,485	6,911	1,159	486	2,479	1,601	749	433
17. Columbia Univ Main Div	4,412	3,464	1,912	1,756	3,533	2,568	1,877	1,756
18. Purdue University	3,922	2,409	1,010	1,005	3,628	2,207	903	923
19. Brown University	3,732	3,570	2,972	1,161	1,132	1,502	1,626	939
20. Univ of Cal San Diego	3,470	2,290	2,248	1,779	3,010	1,961	1,891	1,281
Total, 1st 20 insts.	233,630	201,596	156,888	114,777	181,785	152,116	126,656	95,095
21. University of Utah	3,309	3,077	2,617	2,005	2,844	2,449	2,117	1,504
22. University of Michigan	3,284	2,639	2,589	2,039	559	423	681	497
23. Washington University	3,114	2,803	2,543	2,982	2,970	2,575	2,294	2,707
24. Iowa St U of Sci & Tech	2,995	2,574	2,204	2,025	66	51	29	28
25. Rutgers the St Univ of NJ	2,986	3,221	1,819	1,640	1,746	2,463	1,265	1,294
26. Univ of Wis-Madison	2,757	2,962	2,494	2,750	2,198	2,051	1,864	2,193
27. University of Rochester	2,620	1,438	1,111	1,130	2,419	1,353	1,058	1,074
28. University of Georgia	2,328	1,924	2,053	1,869	1,638	1,401	1,603	1,016
29. University of Arizona	2,170	1,581	674	663	1,997	1,261	575	584
30. Princeton University	2,162	1,286	1,393	786	1,646	845	1,029	619
Total, 1st 30 insts.	261,355	225,101	176,385	132,666	199,868	166,988	139,171	106,611
31. Southern Ill U-Carbondale	2,144	1,356	1,002	307	0	0	0	0
32. New York Inst Technology	2,100	1,894	1,620	1,461	125	113	0	0
33. University of Washington	2,039	2,557	2,239	1,621	1,860	2,134	1,890	1,326
34. SUNY at Stony Brook	2,029	1,423	762	680	1,345	958	511	472
35. Colorado State University	2,017	311	401	343	1,736	230	220	247
36. VA Polytech Inst & St U	1,823	1,545	980	895	676	820	571	395
37. University of Colorado	1,419	612	613	458	1,251	513	505	432
38. University of Minnesota	1,392	676	479	372	816	490	248	339
39. Duke University	1,210	1,069	661	548	939	949	538	424
40. Texas A&M University	1,186	18	0	0	235	0	0	0
Total, 1st 40 insts.	278,714	236,562	185,142	139,351	208,851	173,195	143,654	110,246
41. Univ of Cal Irvine	1,181	1,161	999	536	910	920	939	506
42. University of Oklahoma	1,099	4,055	3,454	3,498	720	2,182	2,106	2,090
43. University of Iowa	1,090	1,217	636	754	60	117	83	146
44. University of Virginia	1,090	970	764	602	611	662	564	403
45. Auburn University	1,074	559	0	0	965	511	0	0
46. Univ of Southwestern LA	1,052	924	124	114	159	143	50	46
47. St. John's University (NY)	1,046	943	920	776	0	0	0	0
48. N J Inst of Technology	1,014	124	207	173	7	54	165	115
49. Univ of Cal Santa Barbara	986	1,257	824	581	554	724	395	200
50. US Naval Postgrad School	942	1,060	1,114	1,028	942	1,060	1,114	1,028
Total, 1st 50 insts.	289,288	248,832	194,184	147,413	213,779	179,568	149,070	114,780
51. California Inst of Tech	866	1,007	1,820	1,784	641	426	983	942
52. Clemson University	851	667	762	405	555	667	590	312
53. Syracuse University	818	699	730	606	605	427	486	429
54. Pennsylvania State Univ	813	5,575	4,302	4,933	525	400	330	356
55. Univ of P R-Rio Piedras	750	660	594	547	379	341	307	283
56. Ohio State University	738	925	770	492	560	620	562	459
57. SUNY at Buffalo	658	512	161	354	426	355	124	264
58. University of Delaware	618	435	429	92	48	71	133	83
59. Indiana University	612	389	412	262	533	308	364	228
60. Harvard University	578	1,644	1,260	1,244	578	968	742	942
Total, 1st 60 insts.	296,590	261,345	205,424	158,132	218,629	184,151	153,691	119,078

Table 39 cont.

Institutional ranking	Total				Federally financed			
	1986	1985	1984	1983	1986	1985	1984	1983
61. University of Florida	554	544	300	180	305	259	109	102
62. Oregon Graduate Center	517	466	419	15	127	114	104	0
63. Rockefeller University	496	820	648	528	442	398	354	297
64. Univ of Nebraska-Lincoln	439	295	344	299	128	74	105	44
65. Univ of Missouri Kan City	435	417	53	0	0	0	0	0
66. Rice University	424	381	305	279	281	253	199	185
67. Southern Methodist Univ	421	380	245	120	390	352	234	117
68. Florida State University	413	329	2,190	1,830	31	15	0	0
69. Univ of South Florida	398	217	170	201	301	217	159	181
70. Univ of Tex at Arlington	388	228	140	87	56	89	33	0
Total, 1st 70 insts.	301,075	265,422	210,238	161,671	220,690	185,922	154,988	120,004
71. Univ of Alabama Huntsville	369	329	48	77	318	286	48	51
72. Institute Paper Chemistry	368	243	258	296	0	0	0	0
73. University of Connecticut	355	372	397	388	161	165	263	208
74. Arizona State University	354	253	168	241	172	107	97	124
75. Louisiana State Univ	346	283	220	133	132	76	0	24
76. University of Oregon Main	344	229	118	2	341	228	108	2
77. Univ of South Carolina	317	395	255	89	52	89	46	27
78. George Washington Univ	316	284	749	726	313	282	617	627
79. U Tennessee Knoxville	312	277	249	119	285	256	230	93
80. N C State Univ at Raleigh	288	581	272	629	190	486	243	346
Total, 1st 80 insts.	304,444	268,668	212,972	164,371	222,654	187,897	156,640	121,506
81. Brigham Young University	288	260	110	51	30	27	34	18
82. Kent State University	286	275	0	0	158	259	0	0
83. Tulane University	285	243	91	58	68	157	54	43
84. University of Dayton	252	508	502	446	217	432	447	395
85. Manhattan College	242	47	82	74	0	0	0	0
86. Drexel University	240	268	206	165	37	19	45	131
87. Wayne State University	218	237	271	43	44	97	198	5
88. Oregon State University	217	202	171	247	51	51	41	112
89. SUNY at Albany	215	114	108	123	215	98	107	86
90. University of Miami	214	374	352	327	138	179	219	219
Total, 1st 90 insts.	306,901	271,196	214,865	165,905	223,612	189,216	157,785	122,515
91. SUNY at Binghamton	209	46	241	201	0	17	168	157
92. Institute of Textile Tech	199	179	162	149	0	0	0	0
93. Wichita State University	188	141	75	12	19	37	42	10
94. University of Pittsburgh	184	150	119	604	148	118	105	183
95. Univ of Central Florida	175	136	109	101	123	96	109	101
96. George Mason University	170	149	133	0	88	80	72	0
97. Harvey Mudd College	153	96	108	0	26	0	23	0
98. Old Dominion University	152	135	122	106	137	124	112	95
99. Univ of Sthrn Mississippi	152	129	68	62	98	1	10	9
100. Washington State Univ	144	189	161	290	139	188	161	290
Total, 1st 100 insts.	308,627	272,546	216,163	167,430	224,390	189,877	158,587	123,360
Total, all Other Insts.	6,733	6,635	6,317	7,806	3,038	3,277	2,968	4,377

SOURCE: National Science Foundation, SRS

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